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(54) **Flat sleeve convertible to a decorative container**

(57) A sleeve used to wrap items such as potted plants or comestibles. The sleeve has a closed bottom and an expansion element for allowing expansion of the sleeve upon the depositing of the pot or items into the sleeve. The expansion element may be a gusset, pleats, random folds or elastic material for enabling the lower portion of the sleeve to conform to the outer and bottom surfaces of the pot to provide a decorative cover about the pot. The sleeve optionally has a detachable upper portion.

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## Description

FIELD OF THE INVENTION

This invention generally relates to sleeves, to be used as containers and, more particularly, sleeves used to wrap flower pots containing floral groupings and/or media containing floral groupings, and methods of using same.

BACKGROUND

It is well known in the floral packaging industry to apply tubular floral sleeves about potted plants for the purpose of erecting a protective sheath about the blooms and foliage of the potted plant for preventing damage to them and entanglement with adjacent plants. Such sleeves generally have an open bottom through which the inserted pot is exposed. U.S. Patents 4,333,267 issued to Witte and 4,413,725 issued to Bruno, and Australian Patent 42319/78 show examples of such open-bottom sleeves.

Other sleeves have closed bottoms upon which the bottom of the pot can rest. However, in such closed sleeves, the lower portion does not have a shape which conforms to the shape of the bottom and outer sides of the pot. For example, in U.S. Patent No. 5,235,782 issued to Landau, an unattractive void space is formed about the pot when the pot is inserted into the sleeve. In U.S. Patent No. 5,388,695, issued to Gilbert, when a pot is inserted into the sleeve, the outer sides of the pot fit within the taper of the sleeve but an empty void space is left underneath the pot which must then be tucked below the bottom of the pot to conceal it. The basic problem in applying a closed-bottom flat sleeve to a pot is that in going from a two-dimensional flat sleeve, to a three-dimensional open sleeve, the shape of the opened sleeve does not conform to the shape of the pot.

There are no sleeves which are currently available which can be erected so that the sleeve closely conforms to the curvature of both the outer sidewall of the pot and to the bottom surface of the pot, whereby the lower portion of the sleeve forms an attractive decorative cover about the pot reminiscent of a preformed pot cover when the upper portion of the sleeve is detached. The object of the present invention is therefore to provide a flat, two-dimensioned sleeve which is erectable into three-dimensions wherein the erected sleeve has a shape which conforms to the shape of the pot without revealing unsightly extra material.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side view of a flattened gusseted sleeve constructed in accordance with the present invention.

Figure 2 is a sectional view of the sleeve of Figure 1.

Figure 3 is a perspective view of Figure 1 with a pot

disposed therein.

Figure 4 is a perspective view of Figure 3 after an upper portion of the sleeve has been removed.

Figure 5A is a side view of the sleeve of Figure 1 with particular reference to the straight fold of the gusset.

Figure 5B is a bottom view of the sleeve of Figure 5A when opened.

Figure 5C is a perspective view of the sleeve of Figure 5A when opened.

Figure 6A is a side view of a sleeve like the sleeve of Figure 5A but with a curved fold in the gusset.

Figure 6B is a bottom view of the sleeve of Figure 6A when opened.

Figure 6C is a perspective view of the sleeve of Figure 6A when opened.

Figure 7 is an alternate version of the sleeve of Figure 1 wherein a bonding material is disposed upon a portion of the upper end of the sleeve for sealing the sleeve.

Figure 8 is an alternate version of the sleeve of Figure 1 having a folding flap for sealing the sleeve.

Figure 9 is an alternate version of the sleeve of Figure 1 having a bonding material disposed on an inner portion of the sleeve for bonding the sleeve to the pot.

Figure 10 is yet another version of the sleeve of Figure 1 having an extended portion serving as a support extension.

Figure 11 is yet another version of the sleeve of Figure 1 having an extended portion serving as a handle.

Figure 12 is a side view of a sleeve showing an alternate pattern of perforations.

Figure 13 is a side view of a sleeve showing another alternative perforation pattern.

Figure 14 is a side view of a sleeve showing another alternative perforation pattern.

Figure 15 is a side view of a sleeve showing another alternative perforation pattern.

Figure 16 is a side view of a sleeve showing another alternative perforation pattern.

Figure 17 is a side view of a sleeve like the sleeve of Figure 1 but without an upper sleeve portion.

Figure 18 is a side view of a sleeve like the sleeve of Figure 1 but with the gusset folded outwardly.

Figure 19 is a sectional view of the sleeve of Figure 18.

Figure 20 is a side view of a sleeve like the sleeve of Figure 1 but having pleats.

Figure 21 is a side view of a sleeve like the sleeve of Figure 20 but having a rounded bottom with no gusset.

Figure 22 is a side view of a sleeve like the sleeve of Figure 20 but having a straight bottom.

Figure 23 is a side view of a sleeve like the sleeve of Figure 20 but having a straight bottom and no gusset.

Figure 24 is a side view of a sleeve like the sleeve of Figure 20 but having the pleats extending only to near the perforations.

Figure 25 is a side view of a sleeve like the sleeve

of Figure 20 but having the pleats extending just a short distance above the lower end.

Figure 26 is a side view of a sleeve like the sleeve of Figure 20 but without an upper sleeve portion.

Figure 27 is a side view of a sleeve like the sleeve of Figure 21 but without an upper sleeve portion.

Figure 28 is a side view of a sleeve like the sleeve of Figure 22 but without an upper sleeve portion.

Figure 29 is a side view of a sleeve like the sleeve of Figure 23 but without an upper sleeve portion.

Figure 30 is a side view of a sleeve like the sleeve of Figure 20 but where the pleats do not intersect the sides.

Figure 31 is a side view of a sleeve like the sleeve of Figure 20 but having z-shaped pleats.

Figure 32 is a side view of a sleeve like the sleeve of Figure 30 but having z-shaped pleats.

Figure 33 is a side view of a sleeve like the sleeve of Figure 20 but having fluted folds.

Figure 34 is a side view of a sleeve like the sleeve of Figure 30 but having fluted folds.

Figure 35 is a side view of a sleeve like the sleeve in Figure 1 but having an elastomeric lower portion.

Figure 36 is a side view of a sleeve like the sleeve in Figure 35 but without a gusset.

Figure 37 is a side view of a sleeve like the sleeve in Figure 36 but with a straight lower end.

Figure 38 is a side view of a sleeve like the sleeve in Figure 37 but with a gusset.

Figure 39 is a side view of a sleeve like the sleeve in Figure 35 but wherein the elastomeric portion extends only partially up from the lower end on the lower portion.

Figure 40 is a side view of a sleeve like the sleeve of Figure 35 but wherein the elastomeric portion is only on the gusset.

Figure 41 is a side view of a sleeve like the sleeve in Figure 35 but wherein the elastomeric portion extends over most of the surface of the sleeve.

Figure 42 is a side view of a sleeve like the sleeve in Figure 20 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 43 is a side view of a sleeve like the sleeve in Figure 21 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 44 is a side view of a sleeve like the sleeve in Figure 22 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 45 is a side view of a sleeve like the sleeve in Figure 23 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 46 is a side view of a sleeve like the sleeve in Figure 24 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 47 is a side view of a sleeve like the sleeve in Figure 25 but rather than having pleats, the sleeve has randomly positioned overlapping folds.

Figure 48 is a side view of a sleeve like the sleeve in Figure 40 but rather than having an elastomeric por-

tion, the sleeve has randomly positioned overlapping folds.

Figure 49 is a side view of a sleeve like the sleeve in Figure 1 except also having slits in the lower portion.

Figure 50 is a side view of a sleeve having a lower end without a gusset having an alternate shape.

Figure 51 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 52 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 53 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 54 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 55 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 56 is a side view of a sleeve having a lower end without a gusset and having yet another alternate shape.

Figure 57 is a side view of a sleeve having an open lower end with a band.

Figure 58 is a perspective view of the sleeve of Figure 57.

Figure 59 is a perspective view of an apparatus and process for making a sleeve in accordance with the present invention.

Figure 60 is a side view of the gusset sealing mechanism of the apparatus of Figure 57.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention contemplates in a preferred embodiment a plant packaging system comprising a floral sleeve further comprising a combination of a protective upper sleeve portion and a decorative lower cover portion for packaging a potted plant. The protective upper sleeve can be detached from the decorative lower cover portion of the package system once the protective function of the sleeve has been completed, thereby leaving the decorative lower cover portion in a position covering the pot. The protective upper sleeve and decorative lower cover components may comprise a unitary construction or may comprise separate components which are attached together by various bonding materials or other sealing or attaching methods.

More specifically, in a preferred embodiment, the present invention contemplates a sleeve-type plant cover for covering a pot means having a bottom surface and an outer peripheral surface. The plant cover comprises (1) a decorative lower portion having a lower end, an upper end, an outer peripheral surface, and an expansion element for allowing expansion of a portion of the lower portion and (2) an upper sleeve portion

extending from the upper end of the lower portion and detachable therefrom. As used herein, the term "expansion element" means an amount of material or alternatively a type of material which can be expanded or unfolded to cover a greater area than in the unexpanded state. The expansion element may be an infolded or outfolded gusset, a pleated or folded area, overlapping folds, or elastic material. When the pot is inserted into the lower portion, the expansion element expands to allow the pot to fit into the lower portion of the sleeve. The lower portion is sized to substantially cover and conform to the outer peripheral and bottom surface of the pot means once the lower portion has been expanded about the pot means.

In a preferred embodiment, the sleeve is constructed so that when the pot is disposed within the sleeve, the sleeve conforms to the shape of the pot so that the bottom of the pot is coplanar with the inner bottom surface of the sleeve wherein there are substantially no overlapping folded portions in that portion of the sleeve which is underneath the pot. Further, it is also preferred that the side wall of the sleeve in the erected position extends angularly from the bottom of the sleeve upwardly from the bottom. Preferably the side wall of the expanded sleeve extends upwardly from the bottom of the sleeve at a substantially uniform angle so that there are no outwardly extending "ears" such as those seen in U.S. Patent 5,235,782 described above. More preferably the side wall of the sleeve in the expanded condition extends upwardly from the bottom at substantially the same angle at which the side wall of the pot extends from the bottom of the pot. Preferably, the bottom of the sleeve in the expanded condition conforms to the curvature of the circumference of the bottom of the pot disposed therein. Also, preferably, the side wall of the sleeve in the expanded condition conforms to the curvature of the circumference of the outer peripheral surface of the pot or to the circumference taken through a plane thereof.

In a preferred embodiment, the sleeve is constructed such that when the sleeve is converted to the expanded position and a pot is disposed therein, both the bottom and the side walls of the sleeve fit closely against the bottom and sidewalls of the pot leaving substantially no void space or gaps there between. In an alternative preferred embodiment, if a gap does exist between the walls of the sleeve and the walls of the pot, the gap is substantially uniform for the entire length of the side wall of the sleeve from the bottom of the sleeve to the upper end of the pot in any given plane.

In a particularly preferred embodiment, the present invention comprises a flattened sleeve for containing a pot means having an outer peripheral surface and a bottom surface. The sleeve comprises

a first panel having an upper end, a lower end, a first side and a second side, a second panel having an upper end, a lower end, a first side and a second side, and a gusset portion. In this embodiment of

the flattened sleeve, the first panel is disposed flatwise upon the second panel with the first side of the first panel joined with the first side of the second panel, and with the second side of the first panel joined with the second side of the second panel, and with the gusset portion extending from the lower end of the first panel and from the lower end of the second panel. The gusset is inwardly folded to extend a distance between the first panel and the second panel.

In this embodiment, the flattened sleeve has a convexly curved lower end, and when the sleeve is expanded to an open state and disposed about the pot means, the sleeve has a side wall which substantially surrounds the outer peripheral surface of the pot means and a bottom substantially without an overlapped portion therein when the pot means rests upon the bottom of the sleeve. Preferably, the bottom of the sleeve in the open state substantially conforms to the circumferential curvature of the bottom surface of the pot means. Also preferably, the side wall of the sleeve in the open state substantially conforms to the curvature of the outer peripheral surface of the pot means. The side wall of the sleeve in the open state may extend upwardly from the bottom of the sleeve at an angle greater than 90 degrees when a pot is disposed within the sleeve. Also, the side wall of the sleeve in the open state may extend upwardly at a substantially uniform angle from the bottom of the sleeve along the outer peripheral surface of the pot means disposed therein.

Preferably, the sleeve comprises an upper sleeve portion extending from the upper end of the first panel and from the upper end of the second panel and which is detachable therefrom via detaching means. Additionally, the sleeve forms a decorative cover when disposed about the pot means. Further, the gusset in a preferred embodiment has a straight fold extending from the first sides of the first and second panels to the second sides of the first and second panels. Alternatively, the gusset has a curved fold extending from the first sides of the first and second panels to the second sides of the first and second panels. Moreover, a bonding material may be disposed upon a portion of the sleeve for connecting to the pot means. The present invention may also comprise a package comprising a flower pot or other items described herein disposed within the sleeve described above, or any other sleeve described herein. The present invention may also comprise a method of assembling a package comprising a flower pot or other items described elsewhere herein disposed within the sleeve described above, or any other sleeve described herein.

In another embodiment, the flattened sleeve is defined as above with a first panel, second panel and gusset and is for containing a pot means having a bottom surface with a characteristic geometric shape. In this embodiment, the sleeve is not defined as having a convexly curved lower end but rather as having, in the

open state, a bottom having a shape which conforms to the characteristic geometric shape of the bottom surface of the pot means so that the bottom of the sleeve is left substantially without an overlapped portion therein when the pot means rests upon the bottom of the sleeve. Where used herein, the term "substantially without an overlapped portion" in the bottom of the sleeve means that the bottom has no single fold the length of which exceeds one radius of the diameter of the bottom surface of the pot or plurality of folds the total lengths of which exceed one diameter of the bottom surface of the pot.

The upper sleeve portion when present may be detachable via a detaching means such as perforations, tear strips and zippers. The plant cover may have an extended portion extending from the upper portion for serving as a handle or support device. Further, the expansion element is optionally constructed and positioned in the sleeve for allowing expansion of a portion of the lower portion into a decorative skirt extending angularly from the decorative lower portion when the upper sleeve portion is detached from the upper end of the lower portion. The expansion element may be infolded or outfolded gussets, a plurality of vertical pleats, a plurality of vertical folds each having a z-shaped cross section, a plurality of vertical accordion-type folds, or other similar types of expandable forms. The expansion element may comprise a plurality of randomly positioned overlapping folds. Any of the folds described herein may be connected or unconnected. The expansion element may be an elastic material which expands to fit the outer surface and bottom surface of the pot when the pot is inserted into the lower portion. These embodiments are all described in further detail below.

The lower portion of the sleeve may be constructed from a first material and the upper sleeve portion may be constructed from a second material different from the first material. Or a portion of the lower portion may be constructed from the same material as the upper sleeve portion. Or the expansion element may be constructed of one material and the remainder of the lower portion and/or upper portion of the sleeve constructed of another material.

The tubular sleeve may form part of a plant package when used in conjunction with a pot assembly disposed within the retaining space of the lower portion of the tubular sleeve, the pot assembly having a floral grouping disposed therein, and wherein the pot assembly is substantially surrounded and encompassed by the lower portion and the floral grouping is substantially surrounded and encompassed by the upper sleeve portion.

Further, the lower portion may comprise a bonding material for bondingly connecting to the upper sleeve portion. Also, the lower portion may comprise a bonding material for bondingly connecting to a pot disposed therein. Further, the upper sleeve portion may comprise a bonding material for bondingly connecting to the lower

portion. The plant cover may further comprise part of a plant package which includes a pot assembly disposed within the inner retaining space of the lower portion, the pot means having a floral grouping disposed therein, and wherein the pot assembly is substantially surrounded and encompassed by the decorative lower portion and the floral grouping is substantially surrounded and encompassed by the upper sleeve portion.

The lower decorative portion of the tubular sleeve may be constructed from a first material and from a second material different from the first material.

While the various sleeve embodiments disclosed herein are primarily directed to use with round bottom flower pots, it will also be clear to one of ordinary skill in the art that one may construct sleeves using the technology described herein which are adapted to fit about and enclose pots having configurations other than round, such as square, rectangular, triangular, trapezoidal, cylindrical, ovoid and other well-known geometric shapes, and which function in accordance with the present invention to substantially conform to the shape of the pot. An example of such a sleeve is shown in Figures 20-23 in U.S. Serial No. 08/386,859, the specification and drawings of which are hereby specifically incorporated herein by reference in their entirety. Where a pot has a shape other than a curved shape, i.e., such as a square, the sleeve conforms to the perimeter of the pot, or to the perimeter of a plane therethrough.

The sleeve described herein can also be used in various embodiments as a growing container or flower pot for growing and cultivating various botanical items. The sleeve described herein may also be used as a combination growing pot and decorative cover for a botanical item, wherein the botanical is first cultivated in the sleeve, then displayed in the decorative portion of the sleeve. The sleeve in its various embodiments described herein may also be used to contain various comestible items such as candy, treats, popcorn, french fries, chicken nuggets, and other fried items, and frozen confections. The sleeve may further be used to contain liquids for drinking or storage; the sleeve may be a collapsible cup, for example.

#### The Embodiments and Methods of Use of Figures 1-6C

A preferred embodiment of the present invention as shown in Figures 1 and 2 and designated therein by the general reference numeral 10 is a flexible tubular bag or sleeve. The sleeve 10 initially comprises a flexible flat collapsed piece of material which is openable in the form of a tube or sleeve. The sleeve 10 preferably is tapered outwardly from the lower end toward a larger diameter at its upper end. In its flattened state the sleeve 10 generally has an overall trapezoidal or modified trapezoidal shape, and when opened is substantially frustoconical to coniform. It will be appreciated, however, that the sleeve 10 may comprise variations in the aforementioned shapes or may comprise significantly altered shapes such as square or rectangular.

wherein the sleeve 10 when opened has a cylindrical or columnar form, as long as the sleeve 10 functions in accordance with the present invention in the manner described herein.

The flattened sleeve 10 has an upper end 12, a lower end 14, a first side 16 and a second side 18. The sleeve 10 has an opening at the upper end 12 and in a preferred embodiment is closed at the lower end 14.

The sleeve 10 comprises a first panel 20 and a second panel 22 which lay flatwise upon each other and are longitudinally sealed, connected, or otherwise continuous along first side 16 and second side 18. The sleeve 10 in its flattened, folded state further comprises a gusset 24 having a length 25 and which has a fold 26 extending between sides 16 and 18 whereby the gusset 24 is inwardly folded between panels 20 and 22. The inwardly folded gusset 24 comprises the expansion element in this embodiment. The fold 26 may be straight (i.e., Figures 1 or 5A) or curved (Figure 6A). The outer edge of the gusset 24 is continuous with the lower edge 28 of first panel 20 and with the lower edge 30 of second panel 22 thereby forming the closed and flattened lower end 14 of the sleeve 10. The lower edge 28 and lower edge 30 are convexly curved and therefore cause the sleeve 10 to have a convexly curved lower end 14. The first panel 20 has an outer surface 34 and an inner surface 36 and the second panel 22 has an outer surface 38 and an inner surface 40. The gusset 24 has an outer surface 44, and an inner surface 45. The inner surfaces 36, 40 and 45 together define the boundaries of the interior space 46 of the sleeve 10. In another embodiment, the sleeve has a sealed rounded lower end with no gusset, such as that shown in Figures 43 and 44 in U.S. Serial No. 08/386,859, the specification and drawings of which are hereby incorporated herein by reference in their entirety.

The construction of the lower end 14 of the sleeve 10, comprising a rounded gusset 24 with a fold 26, permits the circular bottom of an object such as a potted plant to be disposed within the interior space 46 and therein cause the lower portion of the sleeve 10 to conform closely to the frustoconical shape of the pot as shown in Figure 3 as described in detail below. Briefly, the bottom of the pot rests upon at least a portion of the inner surface 45 of the gusset 24, and the outer side walls of the pot rest closely against at least a portion of the inner surfaces 36 and 40 of the first and second panels 20 and 22, respectively. Once expanded, the sleeve 10 has a side wall 48 and a bottom 49 for supporting the pot. The gusset 24 may be constructed from a separate material from the panels 20 and 22 or, as will be clear to one of ordinary skill in the art, the gusset 24 may be constructed from the same web used to form the first and second panels 20 and 22 by sealing, then folding portions thereof. An example of how the gusset 24 may be formed from a separate sheet of material different from the web used to form the first and second panels 20 and 22 is shown in U.S. Patent 3,380,646, issued to Doyen in Figures 9 and 10 and discussion

thereof, which is incorporated herein by references.

As shown in Figure 1, the sleeve 10 is demarcated into an upper protective portion 50 and a lower decorative portion 52. The lower portion 52 of the sleeve 10 is sized to contain a pot of a size standard in the floral industry and well known to persons of ordinary skill in the art. The upper portion 50 of the sleeve 10 is sized to substantially surround and encompass a floral grouping disposed in the pot. The sleeve 10 is demarcated into the upper portion 50 and the lower portion 52 by a detaching element 54 for enabling the detachment of the upper portion 50 of the sleeve 10 from the lower portion 52 of the sleeve 10. In the preferred version, the detaching element 54 is a plurality of perforations in a crenulated or wavy pattern which extends circumferentially across the first panel 20 and second panel 22 of the sleeve 10 from the first side 16 to the second side 18. The term "detaching element", or "detaching means" as used generally herein, means any element or means, or combination of elements or features, such as, but not by way of limitation, perforations, tear strips, zippers, and any other devices or elements of this nature known in the art, or any combination thereof, which enable the tearing away or detachment of one object from another. Therefore, while perforations are shown and described in detail herein, it will be understood that tear strips, zippers, or any other "detaching elements" known in the art, or any combination thereof, could be substituted therefore and/or used therewith.

In a preferred embodiment, as shown in Figures 1 and 2, the lower portion 52 of the sleeve 10 further comprises a base portion 56, and a skirt or fringe portion 58. The base portion 56 comprises that part of the lower portion 52 which, when the pot is placed into the lower portion 52, has an inner peripheral surface which is substantially adjacent to and surrounds the outer peripheral surface of the pot. The skirt or fringe portion 58 comprises that part of the lower portion 52 which extends beyond an upper rim of the pot and adjacent at least a portion of the floral grouping contained within the pot and which is left to freely extend at an angle, inwardly or outwardly or upwardly, from the base portion 56 when the upper portion 50 of the sleeve 10 is detached from the lower portion 52 of the sleeve 10 by actuation of the detaching means 54. In the intact sleeve 10, the skirt portion 58 comprises an upper peripheral edge congruent with the detaching means 54 which is connected to a lower peripheral edge, also congruent with the detaching element 54, of the upper portion 50 of the sleeve 10. In Figures 1 and 2, the upper peripheral edge of the skirt portion 58 is congruent with a series of curved lines of perforations which together form an undulating line and comprise the detaching element 54.

The upper portion 50 of the sleeve 10 may optionally have an additional detaching element 60 indicated as a plurality of vertical perforations for facilitating removal of the upper portion 50 and which are disposed more or less vertically therein extending between the detaching element 54 of the sleeve 10 and the upper

end 12. The upper portion 50 of the sleeve 10 is separable from the lower portion 52 of the sleeve 10 by tearing the upper portion 50 along both the vertical perforations 60 and the detaching element 54, thereby separating the upper portion 50 from the lower portion 52 of the sleeve 10. The lower portion 52 of the sleeve 10 remains disposed as the base portion 56 about the pot and as the skirt portion 58 about the floral grouping forming a decorative cover 64 as shown in Figure 4 which substantially surrounds and encompasses the pot and floral grouping therein. The upper portion 50 may have apertures 62 near the upper end thereof so the sleeve may be supported on a wicket.

As noted above, it will generally be desired to use the sleeve 10 as a covering for a plant as floral grouping contained with a pot 70, as shown in Figure 3. The pot 70 having an upper end 72, a lower end 74, an outer peripheral surface 76, a bottom surface 78 and an inner peripheral surface 80 which encompasses an inner space 82 for retaining a floral grouping or plant 84. The lower end 74 of the pot 70 is generally closed but may have holes for permitting water drainage. The term "pot" as used herein refers to any type of container used for holding a floral grouping or plant 84. Examples of pots, used in accordance with the present invention include, but not by way of limitation, clay pots, wooden pots, plastic pots, pots made from natural and/or synthetic fibers, or any combination thereof. The pot 70 is adapted to receive a floral grouping 84 in the inner space 82. The floral grouping 84 may be disposed within the pot 70 along with a suitable growing medium described in further detail below, or other retaining medium, such as a floral foam. It will also be understood that the floral grouping 84, and any appropriate growing medium or other retaining medium, may be disposed in the sleeve 10 without a pot 70.

The sleeve 10 is generally frusto-conically shaped, but the sleeve 10 may be, by way of example but not by way of limitation, cylindrical, frusto-conical, a combination of both frusto-conical and cylindrical, or square or rectangular in cross-section, or any other shape, including geometric, non-geometric, asymmetrical and/or fanciful as long as it functions in accordance with the present invention described herein. The sleeve 10 may also be equipped with drains or ventilation holes (not shown), or can be made from permeable or impermeable materials.

The material from which the sleeve 10 is constructed has a thickness in a range from about 0.1 mils to about 30 mils. Often, the thickness of the sleeve 10 is in a range from about 0.5 mils to about 10 mils. Preferably, the sleeve 10 has a thickness in a range from about 1.0 mil to about 5 mils. More preferably, the sleeve 10 is constructed from a material which is flexible, semi-rigid, rigid, or any combination thereof. The sleeve 10 may be constructed of a single layer of material or a plurality of layers of the same or different types of materials. Any thickness of the material may be utilized as long as the material functions in accordance with the present inven-

tion as described herein. The layers of material comprising the sleeve 10 may be connected together or laminated or may be separate layers. Such materials used to construct the sleeve 10 are described in U.S. Patent No. 5,111,637 entitled "Method For Wrapping A Floral Grouping" issued to Weder et al., on May 12, 1992, the specification of which is hereby incorporated herein by reference in its entirety. Any thickness of material may be utilized in accordance with the present invention as long as the sleeve 10 may be formed as described herein, and as long as the formed sleeve 10 may contain at least a portion of a pot 70 or plant 84, as described herein. Additionally, an insulating material such as bubble film, preferable as one of two or more layers, can be utilized in order to provide additional protection for the item, such as the floral grouping, contained therein.

In one embodiment, the sleeve 10 may be constructed from two polypropylene films. The material comprising the sleeve 10 may be connected together or laminated or may be separate layers. In an alternative embodiment, the sleeve 10 may be constructed from only one of the polypropylene films.

The sleeve 10 may also be constructed, in whole or in part, from a cling material. "Cling Wrap or Material" when used herein means any material which is capable of connecting to the sleeve 10 upon contacting engagement during the wrapping process and is wrappable about an item whereby portions of the cling material contactingly engage and connect to other portions of another material, or, alternatively, itself, for generally securing the sleeve wrapped about at least a portion of the pot 70. This connecting engagement is preferably temporary in that the material may be easily removed, i.e., the cling material "clings" to the pot 70.

The cling material is constructed and treated if necessary, from polyethylene such as Cling Wrap made by Glad®, First Brands Corporation, Danbury, Connecticut. The thickness of the cling material will, in part, depend upon the size of sleeve 10 and the size of the pot 70 in the sleeve 10, i.e., generally, a larger pot 70 may require a thicker and therefore stronger cling material. The cling material will range in thickness from less than about 0.1 mils to about 10 mils, and preferably less than about 0.5 mils to about 2.5 mils and most preferably from less than about 0.6 mils to about 2 mils. However, any thickness of cling material may be utilized in accordance with the present invention which permits the cling material to function as described herein.

The sleeve 10 is constructed from any suitable material that is capable of being formed into a sleeve and wrapped about a pot 70 and a floral grouping 82 disposed therein. Preferably, the material comprises paper (untreated or treated in any manner), cellophane, metal foil, polymer film, non-polymer film, fabric (woven or nonwoven or synthetic or natural), cardboard, fiber, cloth, burlap, or laminations or combinations thereof.

The term "polymer film" means a man-made polymer such as a polypropylene or a naturally occurring

polymer such as cellophane. A polymer film is relatively strong and not as subject to tearing (substantially non-tearable), as might be the case with paper or foil.

The material comprising the sleeve 10 may vary in color and may consist of designs or decorative patterns which are printed, etched, and/or embossed thereon using inks or other printing materials. An example of an ink which may be applied to the surface of the material is described in U.S. Patent No. 5,147,706 entitled "Water Based Ink On Foil And/Or Synthetic Organic Polymer" issued to Kingman on Sep. 15, 1992 and which is hereby incorporated herein by reference.

In addition, the material may have various colorings, coatings, flocking and/or metallic finishes, or other decorative surface ornamentation applied separately or simultaneously or may be characterized totally or partially by pearlescent, translucent, transparent, iridescent, neon, or the like, qualities. Each of the above-named characteristics may occur alone or in combination and may be applied to the upper and/or lower surface of the material comprising the sleeve 10. Moreover, portions of the material used in constructing the sleeve 10 may vary in the combination of such characteristics. The material utilized for the sleeve 10 itself may be opaque, translucent, transparent, or partially clear or tinted transparent.

The term "floral grouping" as used herein means cut fresh flowers, artificial flowers, a single flower or other fresh and/or artificial plants or other floral materials and may include other secondary plants and/or ornamentation or artificial or natural materials which add to the aesthetics of the overall floral grouping. The floral grouping 82 generally comprises a bloom or foliage portion and a stem portion. Preferably, the floral grouping 82 comprises a growing potted plant having a root portion (not shown) as well. However, it will be appreciated that the floral grouping may consist of only a single bloom or only foliage, or a botanical item (not shown), or a propagule (not shown). The term "floral grouping" may be used interchangeably herein with both the terms "floral arrangement" and "potted plant". The term "floral grouping" may also be used interchangeably herein with the terms "botanical item" and/or "propagule."

The term "growing medium" when used herein means any liquid, solid or gaseous material used for plant growth or for the cultivation of propagules, including organic and inorganic materials such as soil, humus, perlite, vermiculite, sand, water, and including the nutrients, fertilizers or hormones or combinations thereof required by the plants or propagules for growth.

The term "botanical item" when used herein means a natural or artificial herbaceous or woody plant, taken singly or in combination. The term "botanical item" also means any portion or portions of natural or artificial herbaceous or woody plants including stems, leaves, flowers, blossoms, buds, blooms, cones, or roots, taken singly or in combination, or in groupings of such portions such as bouquet or floral grouping.

The term "propagule" when used herein means any structure capable of being propagated or acting as an agent of reproduction including seeds, shoots, stems, runners, tubers, plants, leaves, roots or spores.

Further, in accordance with the present invention, a bonding material may be disposed on a portion of the sleeve 10 to assist in holding the sleeve 10 to the pot 70 having the floral grouping 84 therein when such a pot 70 is disposed within the sleeve 10 or to assist in closing the upper end 14 of the sleeve 10 or adhering the sleeve 10 to the pot 70 after the pot 70 has been disposed therein, as will be discussed in further detail below.

Preferably the bonding material, when present, is disposed as a strip or block on an inner surface 36 or 40 of the sleeve 10. The bonding material may also be disposed upon either outer peripheral surface 34 or 38 of the sleeve 10, as well as upon the pot 70. Further, the bonding material may be disposed as spots of bonding material, or in any other geometric, non-geometric, asymmetric, or fanciful form, and in any pattern including covering either the entire inner peripheral surface and/or outer peripheral surface of the sleeve 10 and/or the pot or pot cover. The bonding material may be covered by a cover or release strip which can be removed prior to the use of the sleeve, pot or pot cover. The bonding material can be applied by means known to those of ordinary skill in their art. One method for disposing a bonding material, in this case an adhesive, is described in U.S. Patent No. 5,111,637 entitled "Method For Wrapping A Floral Grouping" issued to Weder et al., on May 12, 1992, which has been incorporated by reference above.

The term "bonding material or bonding means" when used herein means an adhesive, frequently a pressure sensitive adhesive, or a cohesive. When the bonding material is a cohesive, a similar cohesive material must be placed on the adjacent surface for bondingly contacting and bondingly engaging with the cohesive material. The term "bonding material or bonding means" also includes materials which are heat sealable and, in this instance, the adjacent portions of the material must be brought into contact and then heat must be applied to effect the seal. The term "bonding material or bonding means" also includes materials which are sonic sealable and vibratory sealable. The term "bonding material or bonding means" when used herein also means a heat sealing lacquer or hot melt material which may be applied to the material and, in this instance, heat, sound waves, or vibrations, also must be applied to effect the sealing.

Alternatively, a cold seal adhesive may be utilized as the bonding material or means. The cold seal adhesive adheres only to a similar substrate, acting similarly as a cohesive, and binds only to itself. The cold seal adhesive, since it bonds only to a similar substrate, does not cause a residue to build up on equipment, thereby both permitting much more rapid disposition and use of such equipment to form articles and reducing labor costs. Further, since no heat is required to



effect the seal, the dwell time, that is, the time for the sheet of material to form and retain the shape of an article, such as a flower pot cover or flower pot, is reduced. A cold seal adhesive binds quickly and easily with minimal pressure, and such a seal is not readily releasable. This characteristic is different from, for example, a pressure sensitive adhesive.

The fold 26 in the gusset 24 may be straight from side 16 to side 18, as shown in Figure 5A, or the fold may be curved upwardly as explained below for Figure 6A. When the fold 26 is straight, and when a pot is inserted into the sleeve 10, the pot 70 which is sized to optimally fit therein has a bottom diameter 86. Bottom diameter 86 preferably is in a range of from about .5x to about .75x where "x" is the length 25,

When the pot 70 is deposited into the sleeve 10 having the straight fold 26, a portion 88 of the gusset 24 is positioned against the bottom surface 78 of the pot 70 to form part of the bottom 49 of the sleeve 10. Additionally, a portion 90 of the first panel 20 forms another portion of the bottom 49 of the sleeve 10. Also, a portion 92 of second panel 22 which is a mirror image of portion 90 of the first panel 20 forms another portion of the bottom 49. Together, portions 88, 90 and 92 form the bottom 49 of the sleeve 10 in the expanded state as shown in Figure 5B. Preferably, the bottom 49 of the open sleeve conforms to the curvature of the circumference of the bottom 78 of the pot.

Further, when the pot 70 having the bottom diameter 86 is inserted into the sleeve 10, two mirror image side portions 94 and 96 of the gusset 24 (see Figure 5A) become part of the side wall 48 of the expanded sleeve 10, as shown in Figures 5B and 5C. Thus, it can be seen then that in a preferred embodiment, the gusset 24 of the sleeve 10 in the flattened state surprisingly does not solely constitute the bottom 49 of the sleeve 10 in its expanded state. Rather, the bottom 49 is constituted of portions 90 and 92 of both first and second panels 20 and 22, and of portion 88 of the gusset 24. Additionally, the side wall 48 of the expanded sleeve is constituted of side portions 94 and 96 of the gusset 24 as well as of portions of the first and second panels 20 and 22. The side wall conforms to the curvature and shape of the pot disposed within the sleeve.

Alternatively, the fold in the gusset 24 may be curved, as represented by fold 26a in Figure 6A. Fold 26a extends further inwardly between panels 20 and 22 toward the upper end 12 than does the straight fold 26 in the sleeve 10 shown in Figure 5A. When the pot 70 is deposited into the sleeve 10 with a curved fold 26a, a circular portion 100 of the gusset 24 is positioned against the bottom surface 78 of the pot 70 to form the bottom 49 of the sleeve 10 and which also conforms to the curvature of the bottom of the pot. Additionally, two mirror image side portions 102 and 104 of the gusset 24 become part of the side wall 48 of the expanded sleeve 10, as shown in Figures 6B and 6C. It can be seen then that in a preferred version of the invention having a curved fold 26a in the gusset 24 in the flattened state,

the portion 100 of the gusset 24 comprises substantially the entire bottom 49 of the sleeve 10 when expanded and that the side wall 48 of the sleeve 10 is formed both from the first and second panels 20 and 22, and from portions 102 and 104 of the gusset 24. It will also be understood by one of ordinary skill in the art that the fold in the gusset 24 may be intermediate in curvature between the straight fold 26 and the curved fold 26a (or even may be convex rather than concave) and therein may possess properties of the straight fold 26 but to a lesser degree. Any of the sleeves described anywhere herein which comprise a gusset may have a gusset having a straight fold, or a fold which is curved.

#### 15 Embodiments of Figures 7-19

Another version of the present invention is shown as sleeve 10b in Figure 7 and is exactly the same as the various embodiments of sleeves shown above or elsewhere herein except a strip of bonding material 110 is disposed on the inner peripheral surface 36 and/or 40 of the upper portion 50 of the sleeve 10b generally in the vicinity of the upper end 12 of the sleeve 10b for allowing the upper end 12 to be sealed for enclosing the upper portion 50 of the sleeve 10b about a pot 70 and a floral grouping 84 disposed therein.

Another version of the present invention is shown in Figure 8 and is exactly the same as the various embodiments of sleeves shown above or elsewhere herein except the sleeve, designated as sleeve 10c, comprises a flap 112 positioned at the upper end 12 which can be folded over and sealed with a flap bonding strip 114 to an adjacent portion of the outer surface 34 of first panel 20 of the sleeve 10c near the upper end 12 thereof. Other versions of the sleeve (not shown) may comprise ventilation holes or drainage for allowing movement of gases or moisture to and away from the inner space of the sleeve.

Another version of the present invention is shown in Figure 9 and is exactly the same as the various embodiments of sleeves shown above or elsewhere herein except the sleeve, designated as sleeve 10d, further comprises an inner strip of bonding material 116 disposed upon a portion of either of the inner surfaces 36 or 40 of the sleeve 10d. The strip of bonding material 116 functions to enable either the inner peripheral surface 36 or the inner surface 40 portions thereof, to be bondingly connected to the outer peripheral surface 76 of the pot 70 disposed therein causing the sleeve 10d to be bondingly connected to the pot 70.

In another version of the present invention, after the pot has been disposed within the sleeve, the bonding material on the pot may be used to crimp a portion of the sleeve to secure the sleeve in a position about the pot. A description of a preferred crimping method is shown in Figures 10-13, and described on pages 30-31, lines 10 through 2, in U.S. Serial No. 08/237,078, which is hereby incorporated herein by reference. A description of other methods which may be used in a crimping

process in accordance with the present invention are shown in Figures 5-7, and 15-20, and the corresponding description in U.S. Serial No. 08/347,611, which is hereby incorporated herein by reference in its entirety.

Another embodiment is shown in Figure 10 and is exactly the same as the various embodiments of sleeves shown above or elsewhere herein except the sleeve, designated as 10e, may further comprise an extended portion comprising a support extension 118 which extends away from a portion of the upper end 12 of the sleeve 10. The support extension 118 has one or more apertures 120 disposed therein for allowing the sleeve 10e to be supported on a support assembly which is commercially available and known by one of ordinary skill in the art such as a pair of wickets for shipment, storage, assembly of the sleeve 10e, placement of the pot 70 within the sleeve 10e, or other functions known in the art. The support extension 118 may have a plurality of perforations 122 or other detaching means for allowing the support extension 118 to be removed from the upper end 12 sleeve 10e after the sleeve 10e has been provided for use as described elsewhere herein.

Another version of the invention is shown in Figure 11 and is exactly the same as the various embodiments of sleeves shown above and elsewhere herein except the sleeve, designated as sleeve 10f, has an extended portion comprising a handle 124 for carrying the potted plant package by the sleeve 10f. The sleeve 10f may further comprise a detaching element 126 comprising perforations for removing the handle 124 at a later time.

The sleeves described herein may be formed by intermittently advancing two separate webs, one or two webs preformed in the form of a tube, or a single web folded double and sealing the longitudinal sides and bottom of the two facing panels then cutting the sleeve thus formed from the webs or web. Machines which can form sleeves from such single webs or pairs of webs are well within the knowledge of one of ordinary skill in the art.

As shown in Figure 1, the detaching element 54 is preferably a line of perforations having a regular or irregular curved or wavy pattern extending from side 16 to side 18 on both the first panel 20 and second panel 22. It will be understood that the perforations in any of the sleeves described herein may be constructed in any number of other decorative patterns, several being shown in Figures 12-16. For example, Figure 12 shows a crenate or scalloped pattern 54a. Figure 13 shows a crenate or scalloped pattern 54b which is inverted. Figure 14 shows a crenulate toothed or zig-zag pattern 54c. Figure 15 shows a crenelated or rectangular-shaped pattern 54d. Figure 16 shows a diagonal pattern 54e slanted upwardly from one side of the sleeve to the other. One of ordinary skill in the art will understand these are but a few of the patterns that the perforations may form and one of ordinary skill could contemplate many other suitable patterns.

In another embodiment, the sleeve designated in

Figure 17 as sleeve or flat cover 130 is formed exactly as any of the versions of the sleeves described herein except that it is formed without an upper protective sleeve portion. In this version the sleeve serves as a decorative cover and may be formed with or without a decorative skirt portion or decorative border which extends from or comprises the upper edge of the cover.

The flat cover 130 has an upper end 132, a lower end 134, a first side 136, and a second side 138. The flat cover 130 has an opening at the upper end 132 and is closed at the lower end 134. The flat cover 130 comprises a first panel 140 and a second panel 142 which lay flatwise upon each other and are longitudinally sealed, connected or otherwise continuous along first side 136 and second side 138. The flat cover 130 further comprises a gusset 144 having a length 145 and which has a fold 146 extending between sides 136 and 138 whereby the gusset 144 is inwardly folded between panels 140 and 142. The inwardly folded gusset 144 comprises the expansion element in this embodiment. The fold 146 may be straight or curved as described above for sleeve 10 in Figures 5A and 6A and functions in a similar manner. As shown here, the flat cover 130 has essentially the same construction as sleeve 10, or any other sleeves shown elsewhere herein, except it is not formed with a detachable upper protective sleeve portion. As for the sleeve 10, the construction of the lower end 134 of the flat cover 130 comprising a rounded gusset 144 with a fold 146 permits the circular bottom of an object such as a potted plant to be disposed therein causing the lower portion of the flat cover 130 to conform closely to the frusto conical shape of the pot as shown in Figure 4 and described in detail elsewhere herein.

The sleeve or flat cover 130, thus formed, may be equipped with or absent of apertures 148 near the upper end 132 for enabling the sleeve to be placed on a wicket for transport and ease of handling. The flat cover 130 may further be constructed with an upper end 132 having a border having a shape like any of the perforation patterns described elsewhere herein, for example, in Figures 12-16.

Another embodiment of the present invention is shown in Figures 18-19 and is designated by the reference numeral 150. Sleeve 150 is exactly the same as sleeve 10 or any of the other gusseted sleeves described herein except that sleeve 150 comprises a gusset 152 which is outwardly folded back upon the outer surface of the sleeve rather than inwardly folded as in sleeve 10.

#### Embodiments and Methods of Use of Figures 20-34

Attention is now drawn to the versions of the present invention which are shown in Figures 20-34 and more specifically to the sleeve in Figure 20 which is designated therein by the reference numeral 160, and which is the same as the sleeves described elsewhere herein except for the differences described below. The

sleeve 160, comprises a unitary construction and has a lower decorative portion 162, an optional skirt portion (not shown herein but which is described in U.S. Serial No. 08/237,078, the specification of which is hereby incorporated herein by reference in its entirety), an upper protective sleeve portion 164 and a plurality of pleats comprising expansion elements 166 (only a few of which are specifically designated as such in Figure 20) and further has an outer peripheral surface 168, an open upper end 170 and a closed lower end 172 which in Figure 20 is rounded. The sleeve 160, like the sleeves discussed elsewhere herein, has an inner retaining space 174 which extends from the open upper end 170 to the lower end 172 and which is bounded by an inner peripheral surface 176 of the sleeve 160. The lower portion 162 is sized to substantially cover the outer peripheral surface 76 of a pot 70 as described elsewhere herein and the upper protective sleeve portion 164 is sized to substantially surround the floral portion 84 within the pot 70 which is disposed within the inner retaining space 174 of the sleeve 160.

The upper protective sleeve portion 164 is detachable from the lower portion 162 via a detaching element 178 such as one described in detail in regard to sleeve 10 above. The expansion elements 166 are integral to at least a portion of the lower decorative portion 162 and upper protective sleeve portion 164 as shown in Figure 20. The expansion elements 166 function to allow expansion of a portion of the lower decorative portion 162 about the bottom and/or outer peripheral surface of a pot disposed therein so that the lower decorative portion fits closely thereto as described in more detail above for sleeve 10 and for other sleeves described herein.

As shown in Figure 20, each expansion element 166 of the sleeve 160 comprises one or more areas of excess material shaped in the form of a pleat. The expansion element may also be positioned so that portions of the skirt portion, when present, can be extended angularly from the lower portion 162 forming a decorative skirt portion about a portion of the floral grouping 84 of the potted plant 70 as shown in U.S. Serial No. 08/237,078 referred to above.

The lower end 172 of the lower portion 162 may be constructed in a variety of configurations. For example, the lower end 172 may have a rounded bottom with a gusseted inverted portion (Figure 20). Figure 21 shows an alternative embodiment in a sleeve 160a having a closed lower end 172a which is rounded without a gusset. Figure 22 shows an alternative embodiment in a sleeve 160b having a straight bottom 172b with an inwardly folded gusset to allow further expansion of the bottom. Figure 23 shows a sleeve 160c with a lower end 172c which is straight across without a gusset.

As noted above, the pleats or expansion elements 166 may extend the entire distance between the lower end 172 and the upper end 170 as shown in Figures 20-23. Alternatively, the pleats 166 may extend from any position intermediate between end 172 and 170, for

example, from a lower end 172d of a sleeve 160d to near or just below the perforations (or detaching element) 178d, as shown in Figure 24. Alternatively, the pleats or expansion elements 166 may extend from a lower end 172e in a sleeve 160e to a distance just above the lower end 172e, as shown in Figure 25.

In another set of embodiments shown in Figures 26-29, sleeves 180-180c are formed exactly as described above for sleeves 160-160c, respectively and which function in the same way, but are formed without upper protective sleeve portions. In these versions the lower portion serves as a decorative cover and may be formed with a decorative skirt portion which extends from the upper edge of the cover or may have a decorative border as described elsewhere.

The present invention also contemplates sleeves (not shown) which are similar to sleeves 180-180c but have pleats positioned in the manner shown for sleeves 160d and 160e. Further, the present invention contemplates sleeves, with or without upper protective portions wherein the pleats are not in the side panels but are found only in the gusseted portions. It is further contemplated that in those sleeves with gusseted portions, the pleats may be positioned in both the gusseted portion and first and second panel portions, or only in the first and second panel portions, or in only one of the first or second panel portions.

It is also noted that in the embodiments of the sleeves shown in Figures 20-29, the pleats or expansion elements 166 are substantially parallel. However, it is further contemplated that any of the pleated sleeves specifically described or otherwise contemplated herein may comprise a plurality of pleats 166a each of which extend from the upper end to the lower end of the sleeve as shown in sleeve 160f in Figure 30, that is the pleats 166a do not intersect with the sides of the sleeve but rather tend to converge from the upper end to the lower end.

Attention is now drawn to Figure 31 and to the sleeve shown therein which is designated by the general reference numeral 190. Sleeve 190 is exactly the same as sleeve 160 in Figure 20 except that the sleeve 190 has a plurality of z-shaped pleated expansion elements 192. The expansion elements 192 of sleeve 190 serve the same purpose as the pleated expansion elements 166 of sleeve 160. Figure 32 shows a sleeve 190a which is constructed like sleeve 90 but has the pleats 192a which are positioned in the same manner as the pleats 166a of sleeve 160f in Figure 30.

Attention is now drawn to Figure 33 and to the sleeve shown therein which is designated by the general reference numeral 196. Sleeve 196 is exactly the same as sleeve 160 in Figure 20 or sleeve 190 in Figure 31 except that the sleeve 196 has a plurality of fluted or groove-shaped expansion elements 198 which serve the same purpose as the pleated expansion elements 166 of sleeve 160 and can expand to cause the sleeve to fit closely to the bottom and outer peripheral surface of the pot to form a decorative cover about a portion of

the potted plant 70. It will be understood that the sleeve comprising the plurality of groove-shaped expansion elements may be constructed in the same embodiments as described above, for example in Figures 21-30 and as described and contemplated elsewhere herein. Figure 34, for example, shows a sleeve 196a having pleats 198a positioned in the same converging way as the sleeve 160f in Figure 30 or as the pleats 192a in sleeve 190a.

It will be appreciated by one of ordinary skill in the art that the shapes of the expansion elements described above are but several of the shapes which can be contemplated for the present invention. Other shapes which may be contemplated are gussets, fans, and "accordion-folds" to name but a few.

#### Embodiments and Methods of Use of Figures 35-41

Shown in Figure 35 and referred to there by reference numeral 200 is another version of a sleeve constructed in accordance with the present invention. The sleeve 200 and versions thereof are the same in all respects to the various embodiments of the sleeves described elsewhere herein except the expansion element comprises an elastomeric portion. The sleeve 200 has a lower portion 202 constructed of material having elastomeric properties which allows the lower portion 202 to expand when a pot is disposed within the sleeve 200 when the elastomeric lower portion 202 of the sleeve 200 is stretched about a lower portion of the pot. The elastomeric portion may be comprised of lycra, rubber, elasticized fabrics, or any other sheet materials which have elastic properties. The elastomeric portion of the sleeve 200 will grip the adjacent portion of the pot and will cause the lower portion 202 of the sleeve 200 to closely conform to the shape of the pot and will secure the sleeve 200 to the pot leaving substantially no void space as explained above. The sleeve 200 preferably has an upper portion 204 constructed from the same material as non-elastomeric sleeves described herein above.

The lower elastomeric portion 202 may be a separate component connected to the lower end of the upper portion 204 of the sleeve 200. Alternatively, the lower elastomeric component 202 may be of unitary construction with the upper portion 204 of the sleeve 200 which is non-elastomeric. The lower portion 202 may be an elasticized or rubberized extension of upper portion 204. For example, the sleeve 200 may be constructed from a fabric which is impregnated with an elastic material in one portion to form an elastomeric lower portion.

Shown in Figures 36, 37 and 38 are sleeves 200a, 200b, and 200c, respectively, which represent alternative versions of the invention which are similar to sleeve embodiments 160a-160c, respectively, in Figures 21-23. The sleeve embodiments comprising portions with elastomeric properties may further be constructed like sleeves 180-180c in Figures 26-29, respectively, that is, without an upper sleeve portion. In another series of

versions the present invention contemplates sleeves having expansion elements similar to those of Figures 20-34 and which also have elastomeric properties.

The elastomeric portion of the sleeve may comprise most or all of the lower portion of the sleeve as shown in Figure 35. Alternatively, the elastomeric portion may comprise only a portion of a lower portion 202d of a sleeve 200d. Or, the elastomeric portion may comprise only the gusset portion 204 as shown in Figure 40.

It will be understood that the elastomeric portion, when expanded about the pot may cover only the bottom surface of the pot, or may cover the bottom surface of the pot and a portion of the outer peripheral surface of the pot above the bottom of the pot. In yet another version of the elastomeric sleeve, the elastomeric portion of the sleeve may be constructed in such a way that the bottom of the pot disposed within the sleeve may be covered by a non-elastomeric portion of the sleeve, while a portion of the outer peripheral surface of the pot is the portion surrounded by the elastomeric portion of the sleeve. The elastomeric portion of the sleeve functions to eliminate or minimize the void space between the inner surface of the sleeve and the outer surface or bottom of the pot. Finally, the elastomeric portion may comprise the entire sleeve, as shown in sleeve 200f in Figure 41.

#### Embodiments and Methods of Use of Figures 42-58

Attention is now drawn to another set of embodiments of the present invention, the first of which is designated by the general reference numeral 210 shown in Figure 42. In this version of the invention, the expansion elements comprise a plurality of overlapping folds 212 which are randomly positioned on the panels 214 and 216 and on gusset 218 of the sleeve 210. The overlapping portions of the overlapping folds 212 may be connected via a bonding material or they may be unconnected or some may be connected and some unconnected. The overlapping folds 212 may be distributed over the entire surface of the panels of the sleeve from the upper end to the lower end as shown in sleeve 210 in Figure 42 or they may be disposed over only the lower portion of the sleeve (Figure 46), for example, or over only an area adjacent the lower end of the sleeve (Figure 47). The overlapping folds may be positioned only along the panels of the sleeve, only upon the gusset portion of the sleeve (Figure 48), or upon both the panels and the gusset (Figures 42-44).

Sleeves with overlapping folds are shown as having the same lower end configuration as sleeves described above herein, for example, the sleeves of Figures 20-23, respectively.

The sleeves having overlapping folds may be constructed in any of the manners and configurations shown elsewhere herein.

For example, each of the sleeves 210-210f may further comprise a support extension as mentioned previously which extends away from a portion of the upper

end of the sleeve such as for the sleeve 10e as shown in Figure 10. As described earlier the support extension has one or more apertures disposed therein for allowing the sleeve to be supported on a support assembly which may comprise, for example, a pair of wickets for shipment, storage, assembly of the sleeve, placement of a pot within the sleeve, or other functions known in the art. As noted above, the support extension may have a plurality of perforations or other detaching means for allowing the support extension to be removed from the sleeve after the sleeve has been provided for use as described elsewhere herein. In another version of the invention, and applicable to any of the sleeves described above, or elsewhere herein, a sleeve has a handle for carrying the potted plant package by the sleeve. The sleeve further comprises a detaching element comprising perforations for removing the handle at a later time.

As noted above, the protective sleeve and decorative cover components of the present invention may comprise a unitary construction. Or, may comprise separately formed components which are attached or sealed together by various bonding materials, as shown and described elsewhere herein.

In yet another version of the invention, a sleeve designated by the general reference numeral 220 is shown in Figure 49. Sleeve 220 is exactly the same as sleeve 10 or any of the various versions and embodiments described or shown in figures elsewhere herein except 220 further comprises a plurality of slits 222 disposed in the lower portion 224 thereof for enabling the lower portion 224 to be more easily expanded to fit snugly about the outer peripheral surface of a pot disposed therein.

Referring now to the embodiments of Figures 50-54, shown therein are several alternative shapes of the lower ends of sleeves which may be constructed in accordance with the present invention. Shown in Figures 50-54 are sleeves designated with the general reference numerals 230, 232, 234, 236 and 238, respectively. Each of sleeves 230-238 have non-gusseted lower ends which are sealed closed in a manner similar to either of the sleeves shown in Figures 21 or 23 and are ideally suited to any of the sleeves described herein having expansion elements, for example, such as pleats, overlapping folds, slits, and elastomeric portions. The lower ends may have a partially rounded shape (Figure 50), an outwardly-directed partially trapezoidal shape (Figure 51), an expanded rounded or bulbous shape (Figure 52), a curved pointed shape (Figure 53), a triangular shape (Figure 54), an inwardly-directed trapezoidal shape (Figure 55), or a curved or wavy shape (Figure 56).

In another version of the invention, shown in Figures 57 and 58, and a sleeve designated by the general reference numeral 244, is constructed exactly the same as the sleeves discussed elsewhere herein except that the sleeve 244 has an open lower end 246 and a strap or band 248 which extends across the open lower end

246. The band 248 functions to prevent the sleeve 244 from "riding up" on a pot disposed within the sleeve 244, or to prevent the pot from dropping through the open lower end 246 of the sleeve 244.

#### Construction of the Sleeves - Figures 59-60

It will be readily appreciated by those of ordinary skill in the art that processes for making standard floral sleeves which have open upper and lower ends are well known. In the preferred embodiment of the present invention, the sleeve is constructed with a closed bottom which may simply comprise a seal along the lower end of the sleeve or more preferably the closed bottom comprises an infolded portion such as a gusset which when opened enables expansion of the bottom of the sleeve for allowing insertion of a pot therein and a close, conforming fit thereto.

One version of an apparatus and process used to construct a sleeve such as sleeve 10 described herein is shown in Figure 59. A single web of material 250 from a roll 251 is fed by drive means such as an electric motor (not shown) to a folding assembly 252 which causes the web 250 to fold and double up on itself to form a folded web 254 having an open side 256 and a folded side 258. The folded web 254 is supported upon a conveyor or other support surface 260. As the folded web 254 is advanced by drive rollers 261 or other advancing means in direction 262, the folded side 258 is caused in a continuous process to be infolded or pouched by an infolding device 264 forming a pouch 266 which extends the length of the web 254 therefrom. The web 254 with the pouch 266 therein continues to be advanced in direction 262 to a sealing position 268. A sealing bar (not shown), such as is common and well known in the art, is then activated forming a pair of longitudinally sealed edges 269 and 270. The sealed edges 269 and 270 extend from near the pouch 266 to the open side 256 and may extend completely about the lower end of the incipient sleeve if a gusset is not formed therein.

In the embodiment of the sleeve formed using the apparatus of Figure 59, not only is the lower end formed with a rounded bottom, but a gusset is also formed. The gusset is formed when portions of the infolded pouch 266 of the web 254 are sealed by a sealing device such as the double sealing mechanism 271 shown in Figures 59 and 60. The sealing mechanism 271 is comprised of an upper sealing portion 272 and a lower sealing portion 274. The upper sealing portion moves in a direction 276 and presses an infolded portion of the web 254 against the upper side 278 of the infolding device 264 and seals a portion 280 of the web 254 by heating, pressure or other sealing means well known to those of ordinary skill in the art. Similarly the lower sealing portion 274 moves in a direction 282 and presses an infolded portion of the web 254 against the lower side 284 of the infolding device 264 and seals a portion 286 of the web 254 as above. In this manner a rounded gusset 288 is

formed.

The web 254, now having a sleeve outlined by the sealed edges 269 and 270 and with a gusset 288, is further advanced to a perforating position 290 where perforations 291 are punched into the sleeve and optionally support apertures are also punched into the sleeve for enabling a collection of sleeves to be collected in a stack and held on a support mechanism such as a wicket. Ventilation holes may also be punched into the sleeve at this point. In the next step the sleeve, now with sealed edges 269 and 270, gusset 288, and perforations 291, is advanced to a cutting position 292 where the sleeve is cut by a cutting die or blade (not shown), such as is well known in the art, from the web 254 to form a complete sleeve 294. Excess material 296 may be removed to facilitate removal and storage of the sleeve 294. It will be understood by one of ordinary skill in the art that the steps of sealing, perforating and cutting the sleeves may be performed together in a single step, or two steps at one or two positions.

The process outlined above describes the construction of a sleeve 294 similar to a sleeve 10 without a bonding material disposed upon any portion thereof. However, as explained above, in an alternative version of the invention, a bonding material for bonding a portion of the sleeve to a pot is located on a portion of the inner surface of the sleeve. Shown in Figure 59 is a bonding material applicator 298 such as a sprayer or pad applicator which can be used to apply an area of bonding material 300 to a portion of the inner surface of a sleeve. The bonding material applicator 298 may be reciprocatingly activated by a reciprocating assembly (not shown) which is preferably automatically controlled and construction of which is well within the level of ordinary skill in the art. The bonding material 300 is preferably applied to the web 250 prior to the doubling over of the web 250 so that when the web 250 is doubled over to form the folded web 254, the bonding material 300 is oriented on a portion of the inner surface of the sleeve 294 preferably in the lower portion of the sleeve 294. The result is the production of a sleeve such as one of those shown in Figures 7-9.

The process described herein can be modified to produce sleeves such as any of the other sleeves described elsewhere herein. For example, a sleeve can be produced by inserting a piece of release material (not shown) into the sleeve 294 at some point during the sleeve production process, either manually or automatically, for example, after the bonding material 300 has been applied but before the web 250 has been folded over to form the folded web 254. The piece of release material may be inserted manually by hand or automatically using a device which automatically shoots or blows or deposits such pieces of material and which is well within the skill of one of ordinary skill in the art. Alternatively, the release material may be applied directly upon the bonding material 300 when the bonding material 300 is applied to the web 250. An additional area of bonding material may be applied to another por-

tion of the web with another adhesive applicator (not shown) thereby forming sleeves having bonding material 300 distributed on different portions of the sleeve.

Figure 59 shows both edges of open side 256 of the web 254 as being an equal distance from the folded side 258. It will be understood by one of ordinary skill in the art that the two edges which comprise the open side 256 of the web 254 can be offset during the folding process to form a sleeve such as a sleeve shown in Figures 8, 10, or 11 having an upper end flap which can be folded over to close the upper end or an upper portion used to form an extension of the sleeve.

Figure 59 shows a sleeve-forming process in which a single web is doubled over to form the double-layered web. The sleeve formed as described herein may also be formed during a process using two or more separate webs in a manner well-known in the art. A first roll of material and a second roll of material provide a first web of material and a second web of material, respectively. These webs are fed to a position where one side of the two webs are sealed by a sealing assembly. If a gusset in the finished sleeve is desired, the sealed side can be infolded to form a pouched side as described in the process of Figure 59. The remainder of the operation can be formed as described above for the process of Figure 59.

Sleeves formed in accordance with the present invention can also be formed from tubular materials such as are commercially available. For example, a sleeve can be formed by cutting a portion of a tube, forming a gusset in the lower end of the tube, or sealing the lower end of the tube to form a closed bottom, then sealing and cutting off portions of the lower end of the tube forming a sleeve having a tapered lower end. Adhesive may be applied to an interior portion of the sleeve by opening the tube and spraying a bonding material onto a portion of the inner surface of the sleeve, for example. In another version of the invention, the process of forming the tubular material from one or more flat webs of material may comprise a step in the process of forming a sleeve.

Changes may be made in the construction and the operation of the various components, elements and assemblies described herein or in the steps or the sequence of steps of the methods described herein without departing from the spirit and scope of the invention as defined in the following claims.

#### Claims

1. A flattened sleeve having an outer peripheral surface and a bottom surface, the sleeve comprising:

a first panel having an upper end, a lower end, a first side and a second side;  
a second panel having an upper end, a lower end, a first side and a second side; and  
a gusset portion; and

wherein the first panel is disposed flat-

wise upon the second panel with the first side of the first panel joined with the first side of the second panel, and the second side of the first panel joined with the second side of the second panel, and with the gusset portion extending from the lower end of the first panel and from the lower end of the second panel and inwardly folded to extend a distance between the first panel and the second panel and the flattened sleeve having a convexly curved lower end; and

wherein the sleeve, when expanded to an open state has a side wall portion which may assume a generally conical shape and has a bottom portion which may assume a substantially generally planar configuration without an overlapped portion therein.

2. The sleeve of claim 1 wherein the bottom portion of the sleeve in the open state substantially conforms to a circumferential curvature.
3. The sleeve of claims 1 or 2 wherein the side wall portion of the sleeve includes one or more expansion elements which comprise: folds, overlapping folds, pleats, fan elements, gussets, elastomeric material, and/or combinations thereof.
4. The sleeve of any one of the proceeding claims wherein the side wall portion of the sleeve in the open state extends upwardly from the bottom portion of the sleeve at an angle greater than 90 degrees with reference thereto.
5. The sleeve of any one of the proceeding claims wherein the side wall portion of the sleeve in the open state extends upwardly at a substantially uniform angle from the bottom portion of the sleeve.
6. The sleeve of any one of the proceeding claims further comprising an upper sleeve portion extending from the upper end of the first panel and from the upper end of the second panel and which is detachable therefrom via detaching means.
7. The sleeve of any one of the proceeding claims in combination with a pot means wherein the sleeve forms a decorative cover when disposed about the pot means.
8. The sleeve of any one of the proceeding claims wherein the gusset has a straight fold extending from the first sides of the first and second panels to the second sides of the first and second panels.
9. The sleeve of any one of claims 1-7 wherein the gusset has a curved fold extending from the first sides of the first and second panels to the second sides of the first and second panels.

10. The sleeve of any one of the proceeding claims further comprising a bonding material disposed upon an interior portion thereof.

11. The sleeve of any one of the proceeding claims further defined as constructed from a material having a thickness in a range of from about 0.1 mils (.0025mm) to about 30 mils (.75mm).

12. The sleeve of claim 11 wherein the material has a thickness in a range of from about 0.5 mils (.0125mm) to about 10 mils (.25 mm).

13. The sleeve of claim 12 wherein the material has a thickness in a range of from about 1 mil (.025mm) to about 5 mils (.125mm).

14. The sleeve of any one of the proceeding claims further defined as constructed from a material selected from the group consisting of treated or untreated paper, cellophane, metal foil, polymer film, non-polymer film, cardboard, fiber, cloth, bur-lap, and laminations or combinations thereof.

15. A plant package, comprising:

a pot means having an outer peripheral surface and a bottom surface; and

a sleeve which, in use, may be disposed about the pot means, the sleeve comprising in a flattened state:

a first panel having an upper end, a lower end, a first side and a second side,  
a second panel having an upper end, a lower end, a first side and a second side,  
and  
a gusset portion, and

wherein the first panel is disposed flatwise upon the second panel with the first side of the first panel joined with the first side of the second panel, and the second side of the first panel joined with the second side of the second panel, and with the gusset portion extending from the lower end of the first panel and from the lower end of the second panel and inwardly folded to extend a distance between the first panel and the second panel and the flattened sleeve having a convexly curved lower end and the sleeve when opened and disposed about the pot means having a side wall substantially surrounding the outer peripheral surface of the pot and a bottom substantially without an overlapped portion therein when the pot means rests upon the bottom of the sleeve.

16. The plant package of claim 15 wherein the bottom

of the sleeve disposed about the pot means substantially conforms to the circumferential curvature of the bottom surface of the pot means.

17. The plant package of claims 15 or 16 wherein the side wall of the sleeve disposed about the pot means substantially conforms to the curvature of the outer peripheral surface of the pot means.

18. The plant package of any one of claims 15-17 wherein the side wall of the sleeve disposed about the pot means extends upwardly from the bottom of the sleeve at an angle greater than 90 degrees when a pot is disposed within the sleeve.

19. The plant package of any one of claims 15-18 wherein the side wall of the sleeve disposed about the pot means extends upwardly at a substantially uniform angle from the bottom of the sleeve along the outer peripheral surface of the pot means disposed therein.

20. The plant package of any one of claims 15-19 wherein the sleeve further comprises an upper sleeve portion extending from the upper end of the first panel and from the upper end of the second panel and which is detachable therefrom via detaching means.

21. The plant package of any one of claims 15-20 wherein the sleeve forms a decorative cover about the pot means.

22. The plant package of any one of claims 15-21 wherein the gusset of the sleeve in the flattened state has a straight fold extending from the first sides of the first and second panels to the second sides of the first and second panels.

23. The plant package of any one of claims 15-22 wherein the gusset of the sleeve in the flattened state has a curved fold extending from the first sides of the first and second panels to the second sides of the first and second panels.

24. The plant package of any one of claims 15-23 wherein the sleeve further comprises a bonding material disposed upon a portion thereof for connecting to the pot means.

25. The plant package of any one of claims 15-24 wherein the sleeve is further defined as constructed from a material having a thickness in a range of from about 0.1 mils (.0025mm) to about 30 mils (.75mm).

26. The plant package of claim 25 wherein the material has a thickness in a range of from about 0.5 mils (.0125mm) to about 10 mils (.25mm).

27. The plant package of claim 26 wherein the material has a thickness in a range of from about 1 mil (.025mm) to about 5 mils (.125mm).

28. The plant package of any one of claims 15-27 wherein the sleeve is further defined as constructed from a material selected from the group consisting of treated or untreated paper, cellophane, metal foil, polymer film, non-polymer film, cardboard, fiber, cloth, burlap, and laminations or combinations thereof.

29. The plant package of any one of claims 15-28 wherein the side wall of the sleeve includes one or more expansion elements which elements comprise: folds, overlapping folds, pleats, fan elements, gussets, elastomeric material, and/or combinations thereof.

30. A flattened sleeve for containing a pot means having an outer peripheral surface and a bottom surface with a characteristic geometric shape, the sleeve comprising:

a first panel having an upper end, a lower end, a first side and a second side;  
a second panel having an upper end, a lower end, a first side and a second side; and  
a gusset portion; and

wherein the first panel is disposed flatwise upon the second panel with the first side of the first panel joined with the first side of the second panel, and the second side of the first panel joined with the second side of the second panel, and with the gusset portion extending from the lower end of the first panel and from the lower end of the second panel and inwardly folded to extend a distance between the first panel and the second panel; and

wherein the sleeve, when expanded to an open state and disposed about the pot means, has a side wall which substantially surrounds the outer peripheral surface of the pot means and a bottom having a shape which conforms to the characteristic geometric shape of the bottom surface of the pot means so that the bottom of the sleeve is left substantially without an overlapped portion therein when the pot means rests upon the bottom of the sleeve.

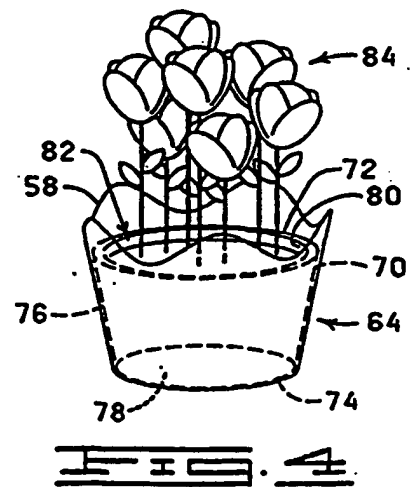
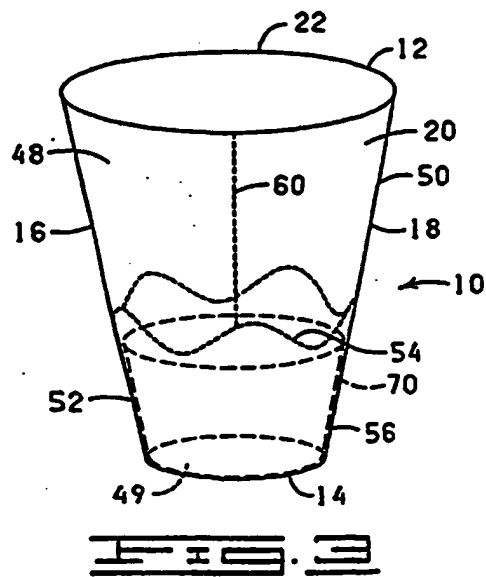
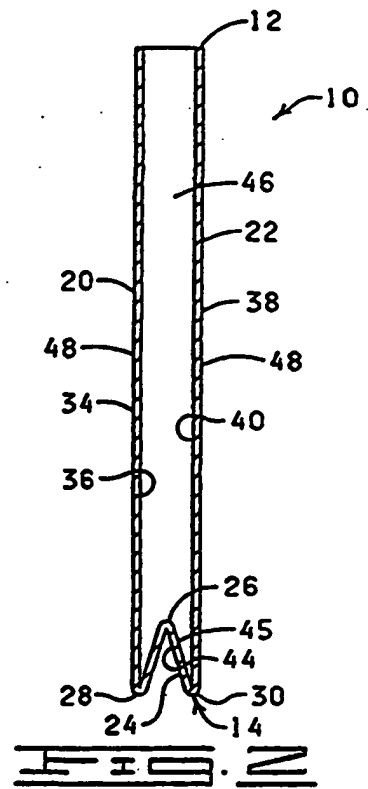
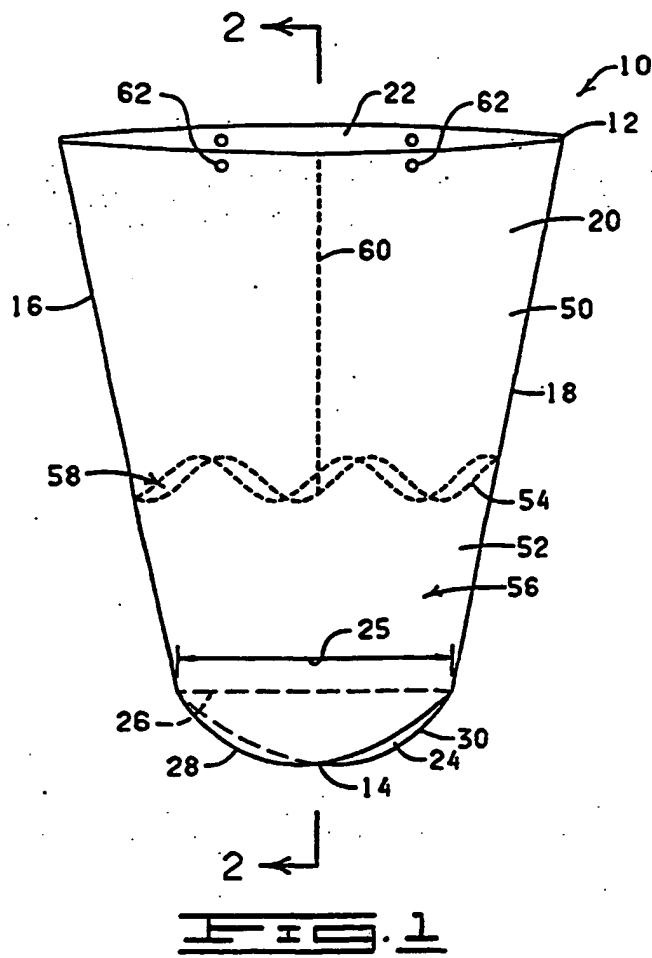
31. The sleeve of claim 30 wherein the side wall of the sleeve in the open state extends upwardly from the bottom of the sleeve at an angle greater than 90 degrees when a pot is disposed within the sleeve.

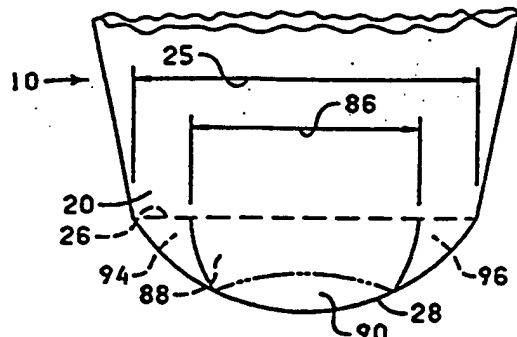
32. The sleeve of claims 30 or 31 wherein the side wall of the sleeve in the open state extends upwardly at a substantially uniform angle from the bottom of the sleeve along the outer peripheral surface of the pot



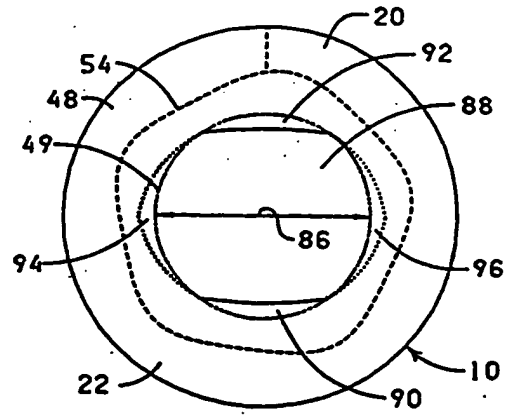
means disposed therein.

33. The sleeve of any one of claims 30-32 further comprising an upper sleeve portion extending from the upper end of the first panel and from the upper end of the second panel and which is detachable therefrom via detaching means. 5
34. The sleeve of any one of claims 30-33 wherein the sleeve forms a decorative cover when disposed about the pot means. 10
35. The sleeve of any one of claims 30-34 further comprising a bonding material disposed upon a portion thereof for connecting to the pot means. 15
36. The sleeve of any one of claims 30-35 further defined as constructed from a material having a thickness in a range of from about 0.1 mils to about 30 mils. 20
37. The sleeve of claim 36 wherein the material having a thickness in a range of from about 0.5 mils to about 10 mils. 25
38. The sleeve of claim 37 wherein the material having a thickness in a range of from about 1 mil to about 5 mils.
39. The sleeve of any one of claims 30-38 further defined as constructed from a material selected from the group consisting of treated or untreated paper, cellophane, metal foil, polymer film, non-polymer film, cardboard, fiber, cloth, burlap, and laminations or combinations thereof. 30 35
40. The sleeve of any one of claims 30-39 wherein the side wall of the sleeve includes one or more expansion elements which elements comprise: folds, overlapping folds, pleats, fan elements, gussets, elastomeric material, and/or combinations thereof. 40
- 45
- 50
- 55

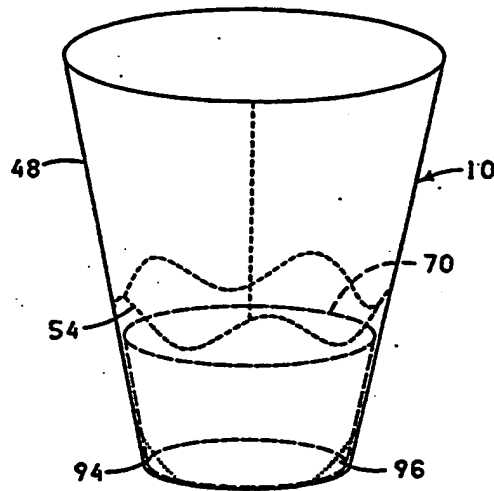




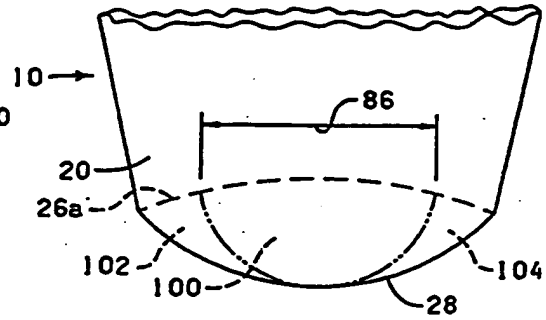
**FIG. 5A**



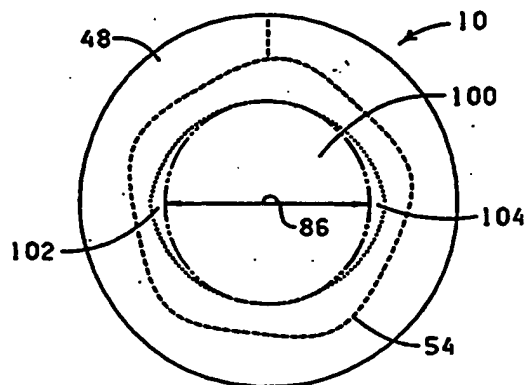
**FIG. 5B**



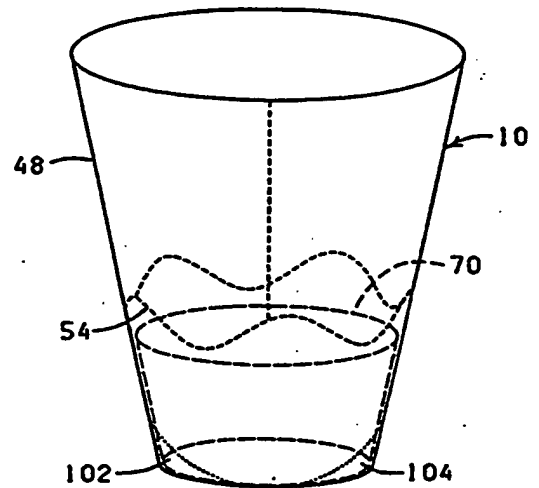
**FIG. 5C**



**FIG. 6A**



**FIG. 6B**



**FIG. 6C**

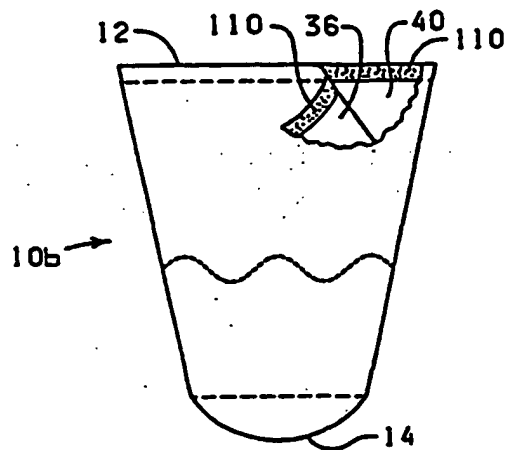


FIG. 7

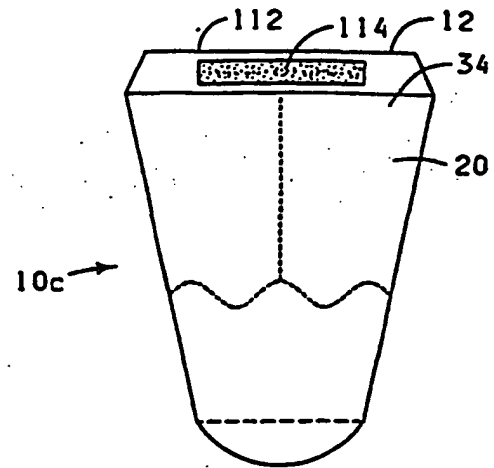


FIG. 8

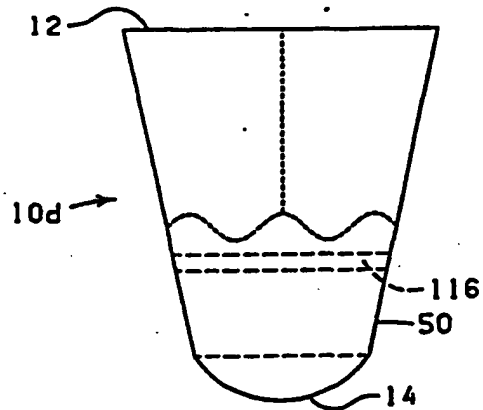


FIG. 9

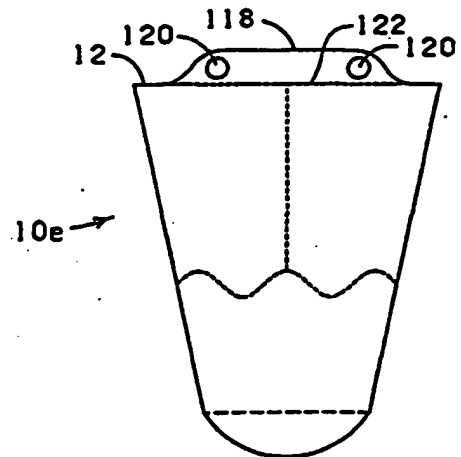


FIG. 10

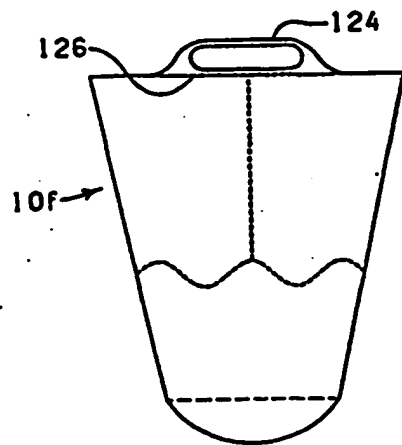


FIG. 11

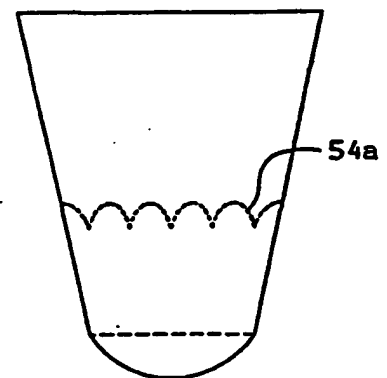


FIG. 12

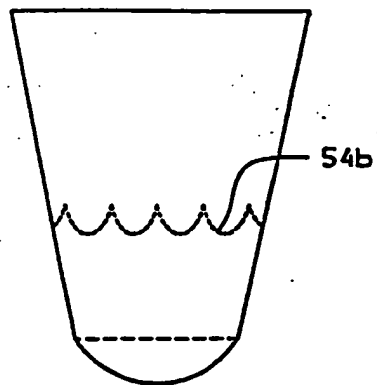


FIG. 13

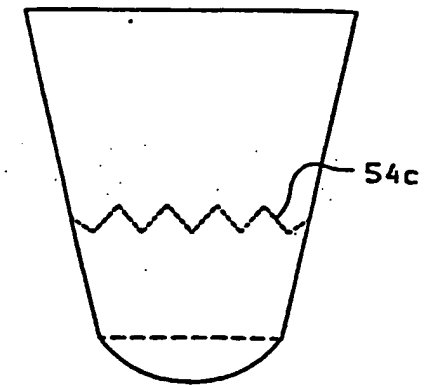
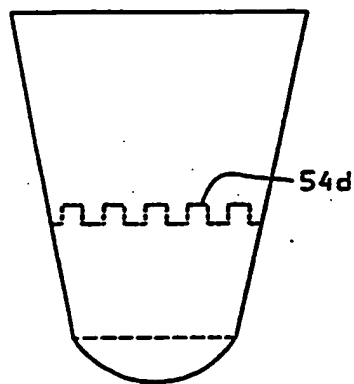


FIG. 15

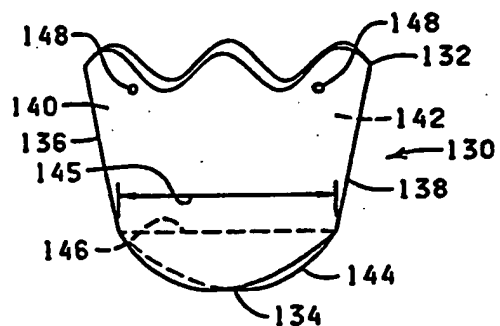


FIG. 14

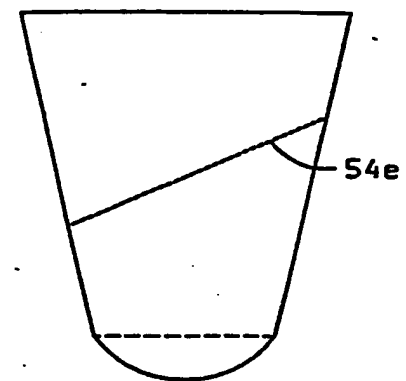


FIG. 16

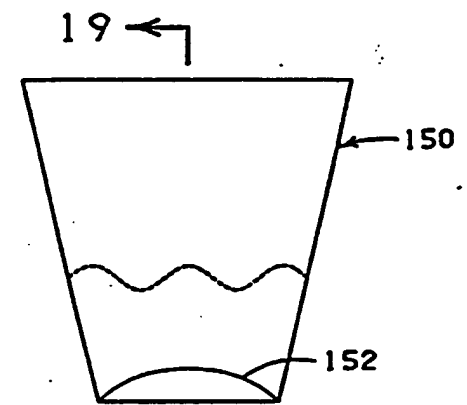
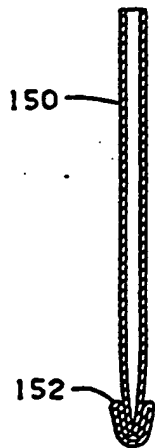
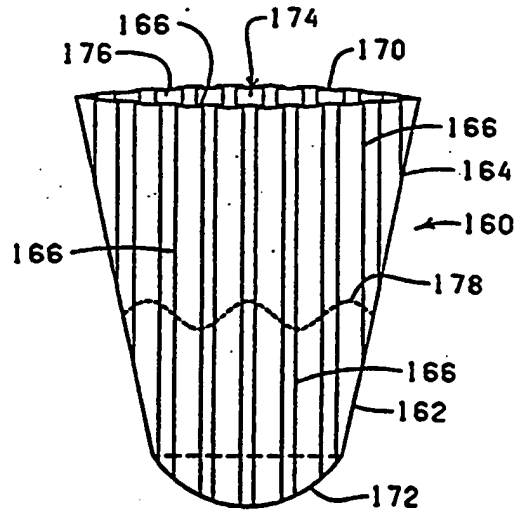


FIG. 17

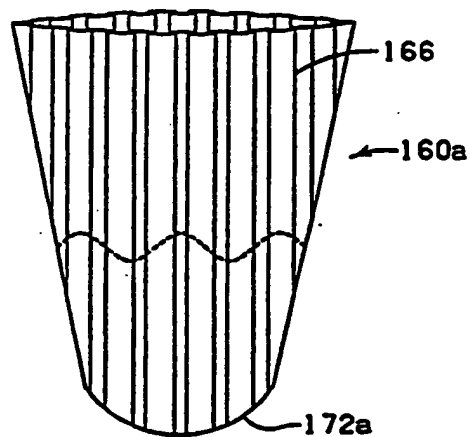
FIG. 18



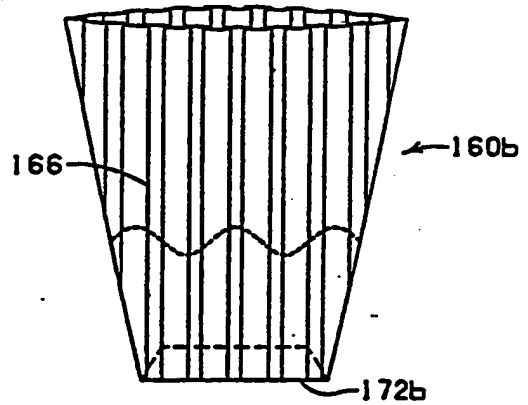
**FIG. 19**



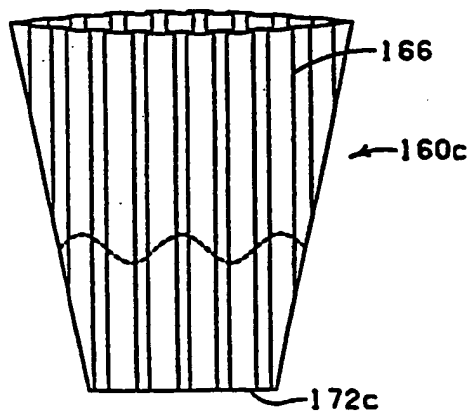
**FIG. 20**



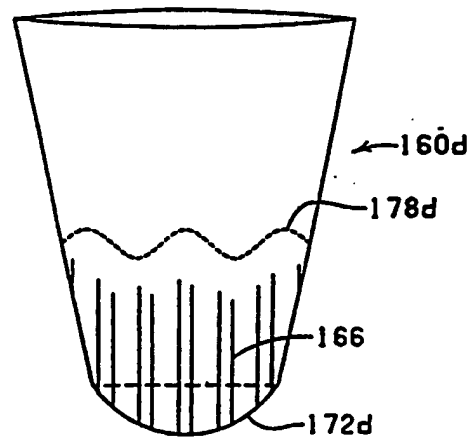
**FIG. 21**



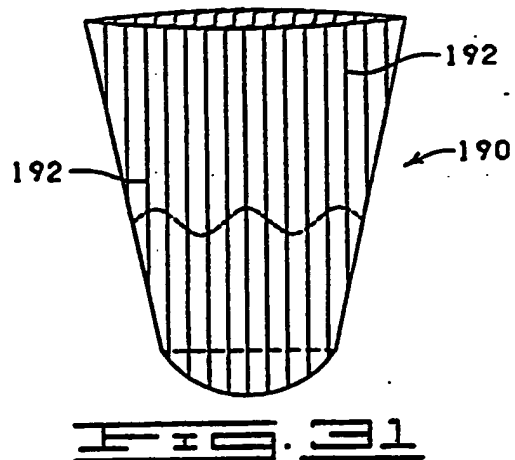
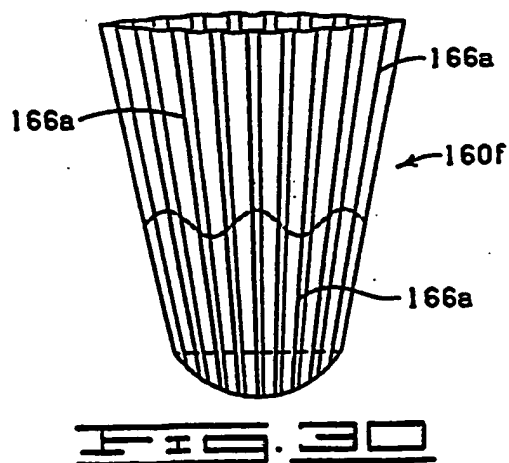
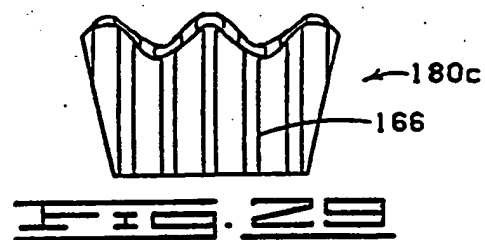
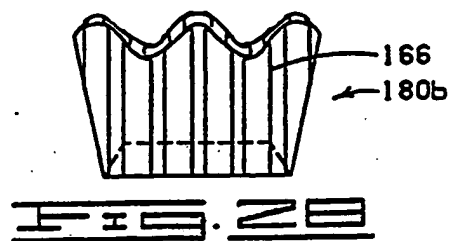
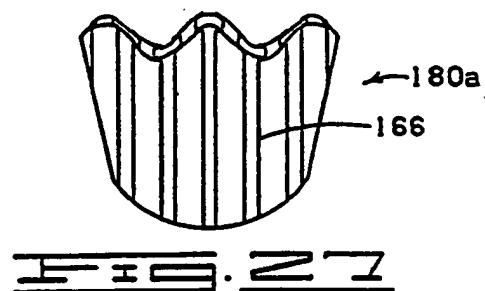
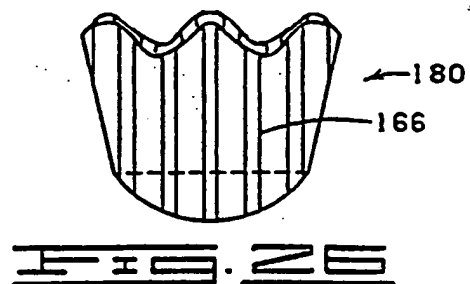
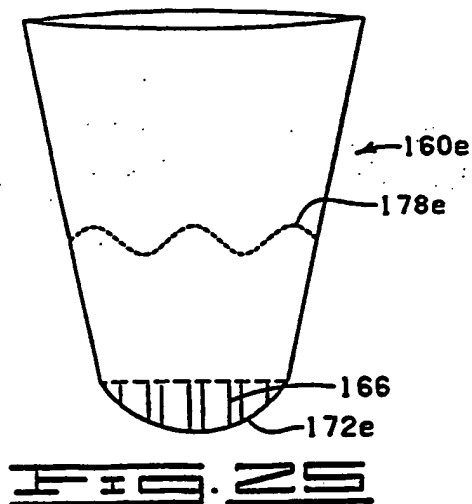
**FIG. 22**



**FIG. 23**



**FIG. 24**



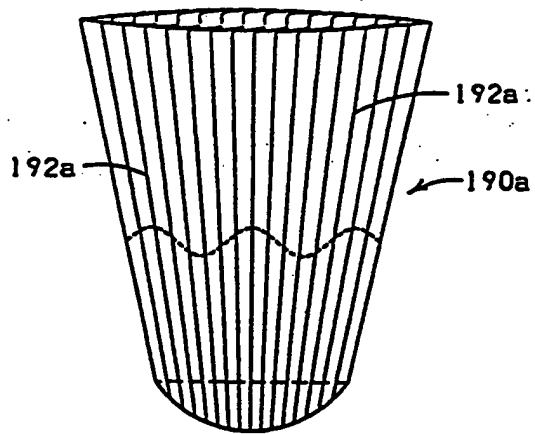


FIG. 32

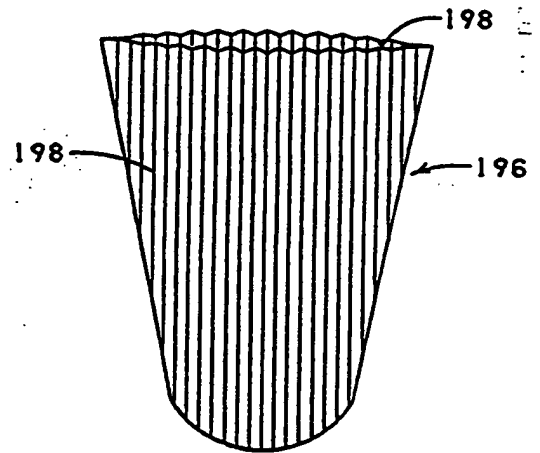


FIG. 33

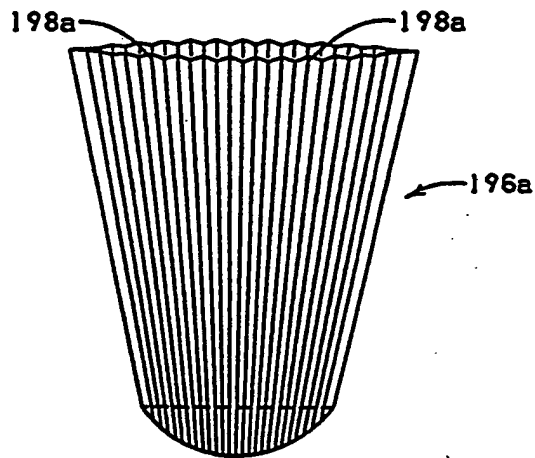


FIG. 34

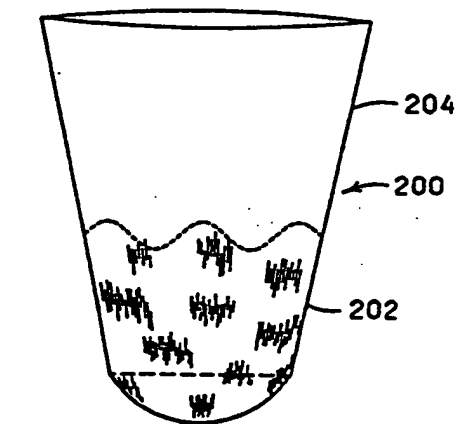


FIG. 35

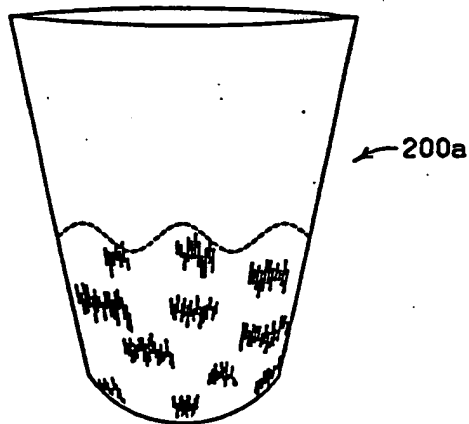


FIG. 36

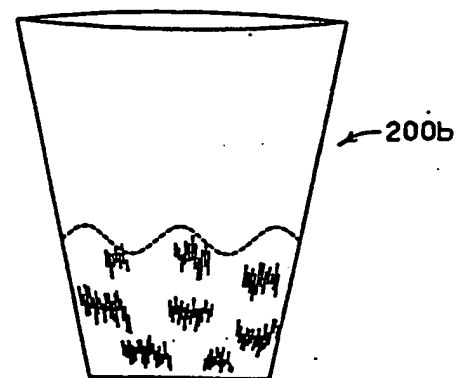


FIG. 37



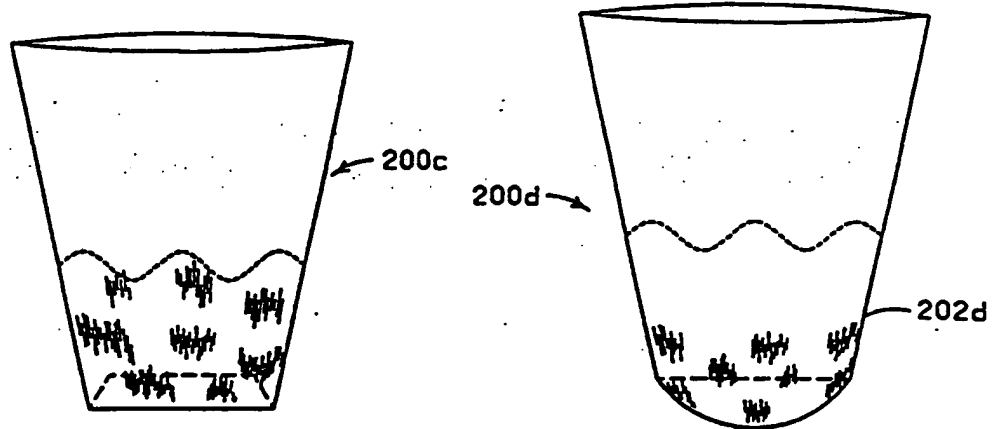


FIG. 38

FIG. 39

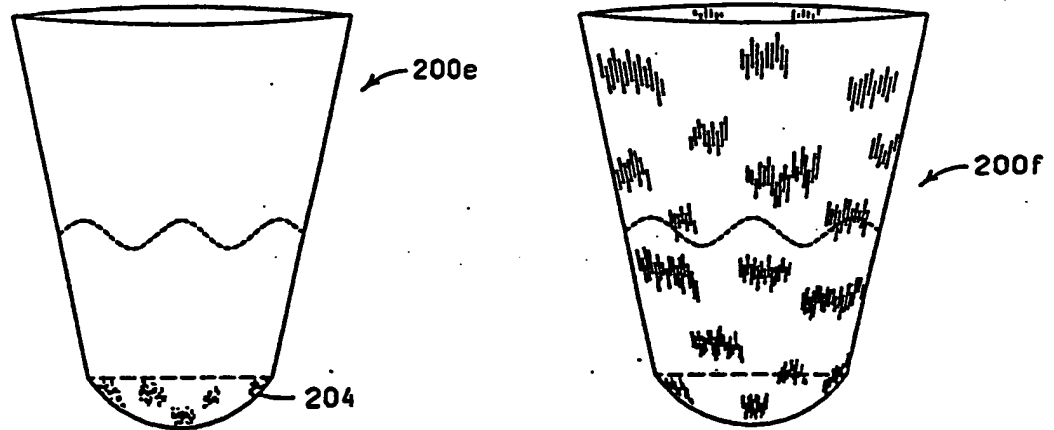


FIG. 40

FIG. 41

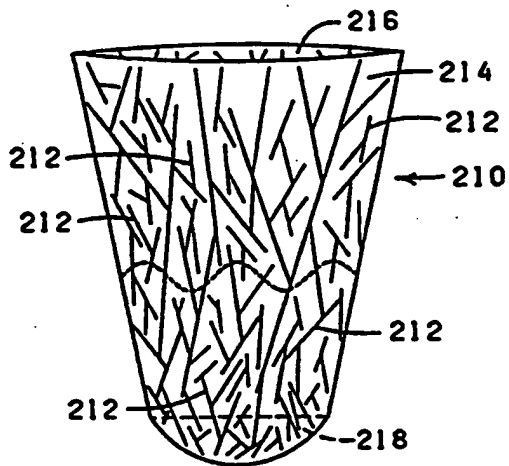


FIG. 42

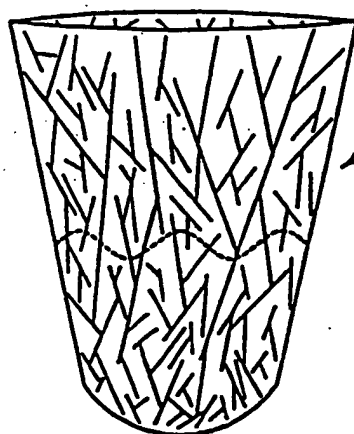


FIG. 43

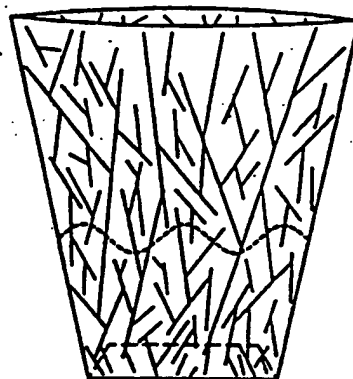


FIG. 44

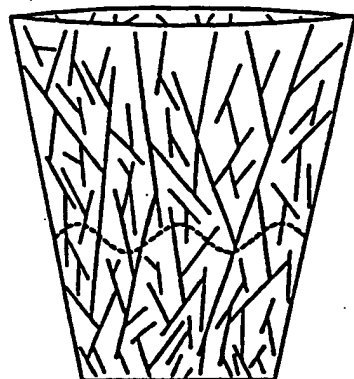


FIG. 45

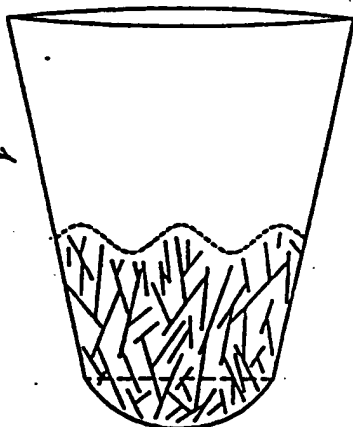


FIG. 46

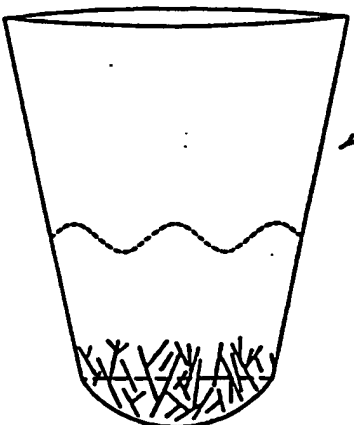


FIG. 47

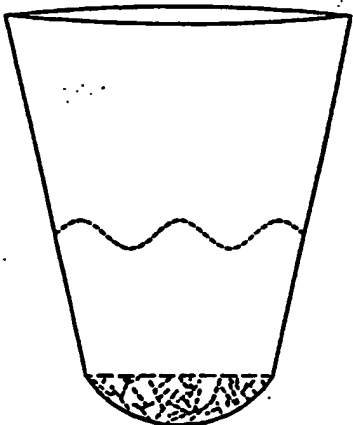


FIG. 48

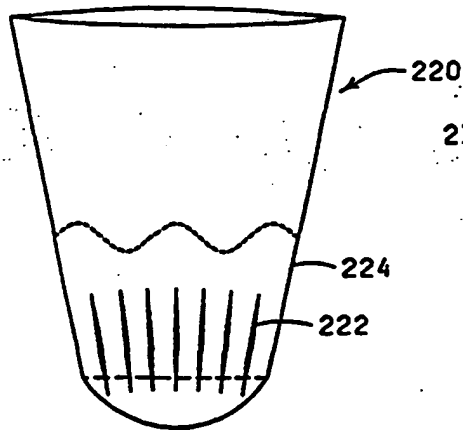


FIG. 49

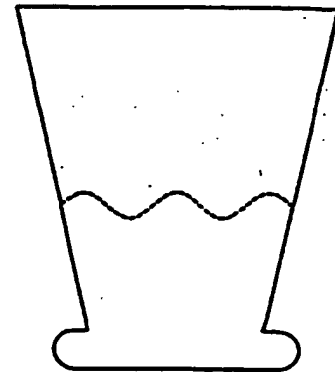


FIG. 50

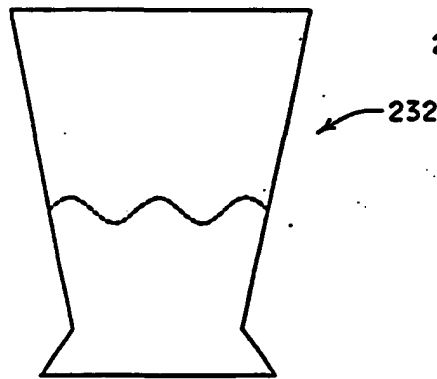


FIG. 51

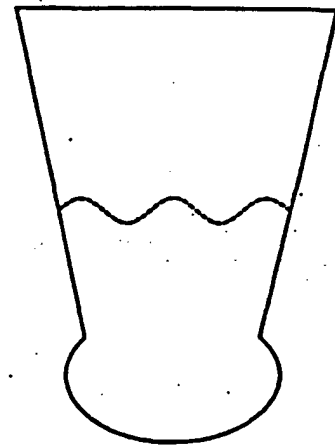


FIG. 52

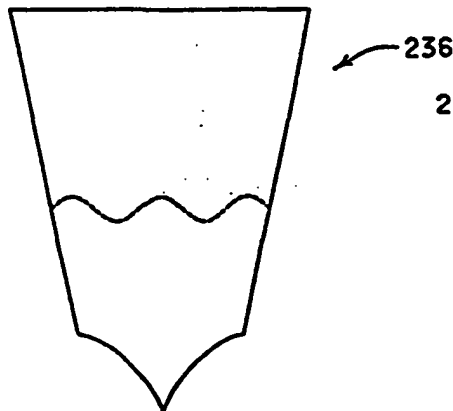


FIG. 53

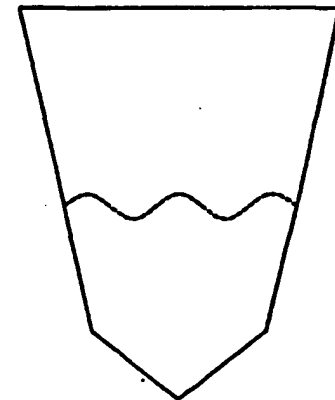


FIG. 54

